Gleanings in Bee Culture

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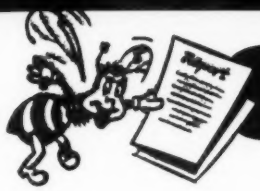

Monthly HONEY Report

by Walter Barth

THROUGHOUT the Northeast the story is the same: bees have wintered poorly. However, there is a consolation in the abundant rains and the firm honey markey resulting from the short crop of 1954. All reporters in this area are hopeful of an average to good crop.

The price of honey from Maine to Florida is much the same. White honey in wholesale lots is bringing anywhere from 12 to 16 cents with an average of 13 cents for amber honeys. Five pound containers range from $1.15 to $1.50 while one pound containers are selling for 32 to 40 cents. Comb honey, what little there is, is bringing $9-10.00 per case (24's).

Reports from Florida point to a short orange and gallberry crop, but bees in Delaware are active on crimson clover. Moisture is sufficient in most areas along the Atlantic coast to make beekeepers hopeful of a crop.

At this writing the honey flow is just beginning in the mountain areas of eastern Tennessee. Honey plants are in excellent condition for the summer flow, so there should be a good crop where bees are in shape. In Mississippi colonies have been held back some due to the late spring freeze and beekeepers are hoping that the colonies will be strong enough for the major flows.

The white honey market is strong in the central southern states and along the Gulf with prices for white honey ranging from 13 to 15 cents per pound in wholesale lots. Amber honeys bring 11 to 14 cents. Retail sales of five pound containers range from $1.20 to $1.50. One pound units bring from 35 to 40 cents with an average of 37 cents.

In the Great Lakes states the flow is generally far ahead of schedule. In Ohio the prospects are encouraging, especially in the western counties where wild sweet clovers and white Dutch clovers are more in abundance. Michigan still wants more rain if a crop is to be expected. Just across Lake Michigan the situation is different for Wisconsin reports sufficient moisture. There it is only up to the honey plants, the bees and the beekeeper.

White honey in wholesale lots is bringing from 13 to 15½ cents per pound where you can find it. Amber honey starts with a low of 11 cents and goes as high as 14½ cents. Five pound pails bring $1.19 to $1.40 while one pound jars range from 29 to 37 cents. Recent rains have broken the dry spell in many areas of Minnesota, Nebraska, Iowa, and Kansas. Hopes are raised for a crop. Arkansas reports a good crop of honey from holly, and prospects are good for a flow from heartsease in Missouri. The vetch honey crop is short in Oklahoma. Basswood bloom in this area of the midwest is far ahead of schedule. Estimates of a crop are generally about 75 percent of normal.

White honey in this midwestern area brings from 12½ to 16 cents in wholesale lots. Amber honeys range from 11 to 15 cents per pound. Here five pound pails are selling at the lowest of anywhere in the country. They range from $1.00 to $1.38 and one pound jars are sold from 25 to 37 cents.

In most places the flow is early but the opposite is true in Oregon where there is plenty of moisture and the honey plants are in good shape. The season is also backward in Wyoming, but there the shortage of moisture and cold weather is also forcing beekeepers to feed. Bees are in good condition in Arizona and New Mexico but weather conditions are not the best. The mesquite crop is about half of normal but cotton looks good and beekeepers are keeping their fingers crossed. The drought in Colorado was broken by recent rains, and at present, bees are making a living from alfalfa. Moisture conditions are now fair in this state and hopes are high for an average crop from irrigated alfalfa. Reports coming in slowly from California does not indicate any big crop from citrus.

Prices for white honeys range from 12 to 16 cents per pound and 10 to 12 cents is average for amber honey. Five pound pails range from $1.15 to $1.45 while one pound jars range from 29 to 38 cents. Two pound jars bring from 55 to 65 cents.

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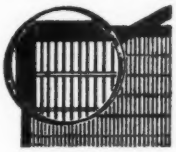

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Effect on honeybees of aerial applications of DDT

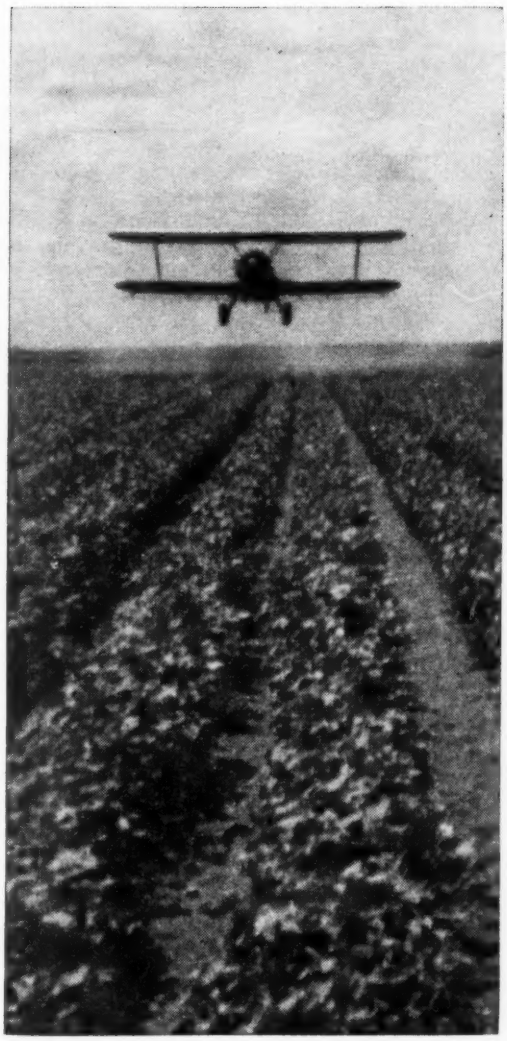
W. L. COGGSHALL, J. E. DEWEY, and E. J. DYCE*
Cornell University, Ithaca, N. Y.

Part I

IN May 1954 a project was undertaken to determine the effect of aerial applications of DDT on colonies of honeybees. Observations made in N. Y. State in 1948 by Dyce and others (see p. 90, February 1950, Gleanings in Bee Culture) indicated that little loss might be expected from DDT applied in this way to forest lands early in the season. Additional information was sought because of a loss of honey bees in 1953 allegedly resulting from aerial applications of this material. The applications in question were for the control of forest tent caterpillar on State lands and privately owned maple groves (sugar bushes).

In cooperation with the N. Y. S. Conservation Dept. at Albany, observations were made in Clinton Co. during and following routine aerial applications to a number of maple groves, a total of approximately 100 of which were treated. Applications were made at the rate of one gallon per acre of a 6 per cent solution of DDT in No. 1 fuel oil (½-lb. actual DDT per acre).

On May 4th two 8" x 10" glass plates were placed in each of three commercial apiaries located in or adjacent to groves to be sprayed. Spraying took place on May 5th between the hours of 5:45 and 8:00 a.m. with temperatures in the low 30's. DDT deposits on four plates from two apiaries close to maple groves



The airplane is a useful agricultural tool in fighting the boll weevil. In 1922, it was used experimentally to apply dusts near Tallulah, La. The following year the first commercial aircraft dusting firm was organized in the South. This airplane is spraying cotton fields near Lubbock, Texas.—U. S. Dept. of Agri., Office of Information, Press Service.

* Credit is also due R. A. Morse, B. D. Hilton, and Chas. Grant for assistance with the collection of data, chem. analyses, and aerial application respectively.

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averaged .167 micrograms per square centimeter. Two plates in an apiary located within a sprayed grove averaged .37 micrograms per square centimeter.

Bees in these apiaries gathered pollen the afternoon of May 5th and showed no visible effect of DDT that day or the following. No maple trees with blossoms were seen, but bees were freely visiting wild flower blossoms in one grove. Subsequent examinations did not indicate any loss from the May 5th spraying.

One of the three apiaries mentioned above was located within an orchard which was given a routine treatment on May 7th by means of a Speed Sprayer, using four pounds of 50 per cent DDT per 100 gallons of water the rate of about 110 gallons per acre. Several hundred dead bees were found in front of each colony. A 300 bee sample of those which died during the first 48 hours after application had a DDT residue of 4.85 parts per million. A 200 bee sample of those dying from about 72 to 96 hours after application had a DDT residue of 2.94 p.p.m. No further observations of these colonies were made after May 12th. No brood loss had occurred up to this time and the loss of adult bees did not reduce strength appreciably.

Second Phase

THE SECOND phase of the 1954 project involved aerial application of 12 per cent DDT in oil (1 lb. actual DDT per acre) to several thousand acres of land in Montgomery County. This application was for the eradication of gypsy moth in the area and was applied under the direction of the Plant Pest Control Branch of the Agricultural Research Service of the U.S.D.A., Albany, N. Y.

An early application to a portion of this area in which no apiaries were actually located necessitated the placing of colonies therein for observation. Nine colonies in good condition were moved to the area. Brood counts made on May 5th averaged nearly nine and one-fourth frames per colony.

On May 5th eight-inch by ten-inch glass plates, 22 in number, were distributed to record deposits from the application made on May 6th. Average deposit on 20 of these plates located in or at various distances from the nine colony apiary, all within the sprayed area, was 1.92 micrograms per square centimeter, with a range of from 0.08 to 5.90. Two plates placed in a commercial apiary just outside the sprayed area had deposits of 0.13 and 0.06 micrograms per square centimeter.

At 5:30 p.m. May 6th 112 dead bees were collected at the entrances of the nine colonies, later analysis indicating 8.90 p.p.m. DDT. Only two dead bees could be found in the field in which bees were visiting dandelion and yellow rocket blossoms. Four dead bees found along a nearby road were suspected of having been killed from drinking from roadside puddles with a heavy coating of spray.

No Dead Bees in Commercial Apiary

The commercial apiary located just outside the sprayed area had no dead bees at the entrance which appeared to have been killed by the spray.

On May 7th bees were flying freely from 10:00 a.m. to about 5:30 p.m., and 223 dead bees were collected from the nine colonies. Upon analysis this sample indicated a content of 4.20 p.p.m. DDT.

Cool, rainy weather prevented normal bee flight, and not until May 13th could more than a few dead bees be found at the entrances of the nine colonies when a total of 90 were collected. Only 0.67 p.p.m. DDT were found in this sample, indicating that very few of the 90 bees had died from the effects of DDT.

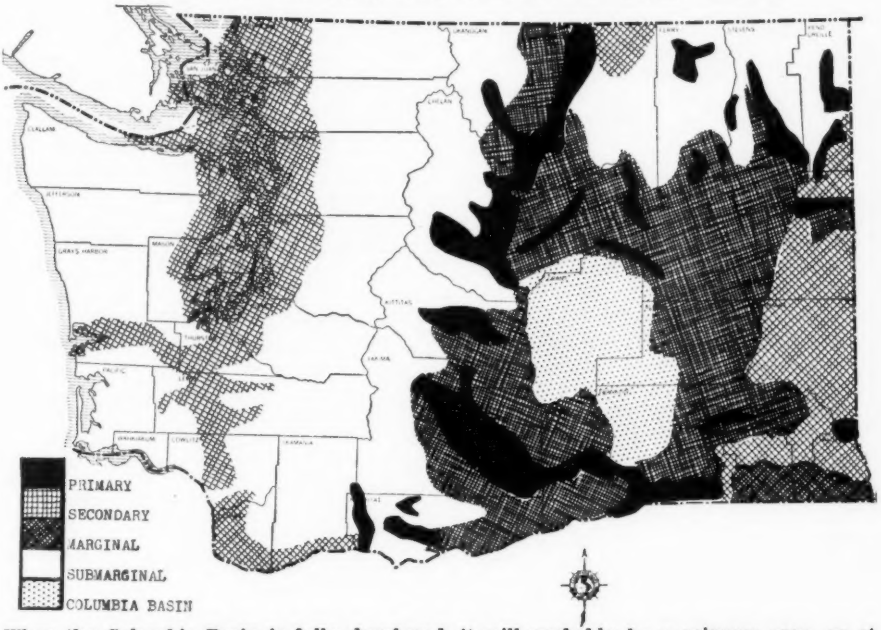
On May 15th most of the remainder of the large area was sprayed. To make additional observations possible in the nine colony apiary, this immediate area including the apiary and fields in which the bees were working, was again sprayed. On May 16th at 3:30 p.m. 103 dead bees were collected at the entrances of the nine colonies, and it was estimated that 600 dead bees could have been collected in the commercial apiary of 40 colonies located just outside the sprayed area. No analyses are available on bees collected on this date.

On May 18th five commercial api-

(Continued on page 443)

Beekeeping in Washington

DR. H. S. TELFORD, Chairman
Department of Entomology, State College of Washington, Pullman



When the Columbia Basin is fully developed, it will probably be a primary area, or at least secondary. Roughly, 40 per cent of it has already been developed, and bees are being currently utilized for pollination of red clover and alfalfa.

BEEKEEPING IS greatly diversified in Washington. It is most frequently a part-time occupation, although we have a few beekeepers who are relatively large operators. The income from honey and wax is greatly augmented by rentals for pollinating tree fruits. Some income is also obtained for pollinating legume seed crops. Although there is considerable competition for good bee pasture, particularly in the lower Yakima Valley, this may lessen since the Columbia Basin irrigation project, and other reclamation projects are opening up thousands of acres of new land annually. When fully developed they will increase our irrigated land almost a million acres—roughly twice the state's acreage of tillable irrigated land before the projects got underway. Roughly, 40 per cent of the basin's area has already been developed. Plantings of bee forage plants such as legume seed crops, mint, tree fruits, cane fruits, and vegetables are anticipated.

We have approximately 86,000 colonies with an average yield of 50 pounds of extracted honey. In 1954 this amounted to 4,300,000 pounds for the state. The annual value for both honey and beeswax is in excess of one-half million dollars.* The added income from pollination services, principally on tree fruits, would approach three-quarters of a million dollars. About 30,000 colonies are utilized for pollination. About 25 per cent of these are rented twice in the same season.

Bee poisoning from insecticides is not acute. Farmers are more and more following recommendations from their State College and rarely do they conflict with beekeeping. Occasionally, however, losses occur when parathion and DDT sprays are applied on apples and pears too late, when bloom is well started, and each year we have complaints of poisoning due to toxic chemicals applied on alfalfa while in full

* USDA Agric. Marketing Service, Crop Production Board, January 1955.

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bloom. We have restrictive legislation which prohibits the application of a wide range of insecticides known to be toxic to bees during the blossoming period of legume seed crops.

The inspection service is administered by the State Department of Agriculture at Olympia, while the research, extension, and teaching activities are the responsibility of the State College of Washington, Pullman. Dr. Carl A. Johansen is in charge of the two principal bee research projects, one on insect pollination of tree fruits, vegetables, and legumes, the other on laboratory and field observations on bee poisoning from economic poisons. No formal beekeeping courses are taught due to lack of demand, but any interested student may obtain college credit for beekeeping by project. Several have taken advantage of this. We have a number of active 4-H beekeeping clubs.

The Washington State Beekeepers' Association is quite active, and is especially helpful in the development of effective legislation, cooperative research projects, formulating tree fruit pollination recommendations, and similar activities. There are other beekeeping organizations. The Puget Sound Organization, composed largely of hobbyists, are singularly successful and has a relatively large membership.

The principal bee plants and their relative importance are listed below:

Alfalfa: Biggest honey source in the lower Yakima Valley where it is grown for seed. There is a considerable amount on roadsides and waste areas. It is seldom worked for pollen.

Clovers:

Alsike - Adapted to wet lands subject to flooding in meadows in the Palouse area. Economically important both sides of the Cascades.

Ladino - Occurs only in our irrigated areas, mostly in eastern Washington.

Red - Grown principally in the Yakima Valley and the Columbia Basin. Extensive acreages also in western Washington. An important honey plant.

Sweet (yellow and white) - Probably our most valuable honey plant. Occurs primarily in eastern Washington. Produces a high quality honey.

Fireweed: The principal honey plant in western Washington. It grows best on burnt-over forest areas. Yields are erratic apparently due to variations in moisture and temperature. The honey is of high quality.

Cole Seed Crops: Occur primarily in northwestern Washington. They have a long blooming period. Cabbage seed honey is mild and of high quality.

Brambles: Raspberries, loganberries, and related cane fruits of considerable value, principally in western Washington.

Mint: Peppermint, and to a very limited extent — spearmint, are grown for oil principally in the irrigated areas of eastern Washington. It is a good yielder, but honey is dark and strong. Mint fields grown near sources of alfalfa and sweet-clover fields are a source of contamination in producing high quality alfalfa or sweet-clover honey. Most mint honey goes into bakery channels. Its alleged low quality is often off-set by high yields.

Tree Fruits: Surplus honey is seldom collected since both pollen and nectar are used primarily for early spring build up.

Dandelion: A valuable early bee plant for both honey and nectar.

Vetch: This is not an important crop, but the plants grow well on both slopes of the Cascades. While bees feed on it in the Palouse area where it grows well on roadsides and idle land, they will leave it in preference to sweet clover.

Canada Thistle: Occurs commonly in wheat fields, roadsides, ditch banks, and other idle lands. It is collected primarily for nectar.

Locust: This tree is locally important in eastern Washington. It is of lesser importance recently since extraneous drift of 2,4-D applications to wheat fields have apparently harmed and killed many of our locusts.

Sulfathiazole as a control for A.F.B.

EDWIN J. ANDERSON, Pennsylvania State University*

Apiary No. 5 used for the study of the effects of drugs on AFB.

THE USE of drugs for the control of A.F.B. (American foulbrood) has been and still remains a sharply controversial subject in American and European beekeeping circles. This is due to the uncertainty regarding the value of drugs as a control for A.F.B. and to the destructive potential of this disease to the industry.

The writer began a study of sulfathiazole and its effect upon A.F.B. as one of his first projects in apicultural research in 1944. This problem resolved itself into three questions (1) Will sulfathiazole or other drugs such as terramycin cure A.F.B.; (2) if so, what is the most effective method of using these drugs; and (3) will the beekeepers use the drugs effectively in their own apiaries if the drugs prove to be effective under more or less controlled conditions in the University apiaries?

* Authorized for publication on April 7, 1955 as Paper No. 1960 in the Journal Series of the Pennsylvania Agricultural Experiment Station.

In order to answer the first two questions, six apiaries ranging in size from six to 36 colonies each were used to make a thorough study of this phase of the problem. The procedure followed was different for each apiary. The results obtained in all but one of these apiaries favored the use of drugs as a control for A.F.B. The results, as observed, in the six apiaries are given in some detail.

Apiary No. 1. This apiary consisted of 21 colonies of bees, all but three of which were contaminated with A.F.B. The colonies as a whole were in such poor condition that a drastic program of treatment was considered advisable. The bees were treated in July 1945.

Eleven empty hives were disinfected by scrubbing them with a 10 per cent solution of formaldehyde. The hives were left to dry for five days, then were filled with frames containing full sheets of foundation. The bees from all 21 colonies, including those not showing infection, were shaken into

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the 11 clean hives. All frames of brood and honey were burned in a hole in the ground and the ashes covered with 15 inches of dirt. The new colonies formed were fed sugar syrup containing one-half gram of sulfathiazole to each five pound pail of syrup. They were fed the same as package bees or they were fed until all but one of the sheets of foundation were drawn.

This apiary was kept under observation for three years during which time it remained free of A.F.B.

Apiary No. 2. All but one of the six colonies in this apiary were contaminated with A.F.B. in the spring of 1946. They were all fed sulfathiazole in sugar syrup in the same proportions as in Apiary No. 1 but the combs were left in the hive regardless of how heavily infected they were with A.F.B. Each colony was fed a five-pound can of treated syrup at intervals of two to three weeks. Feeding was continued during 1946 and 1947 until all infected brood had been removed from the combs and the combs contained only normal brood. The feeding of sulfa-treated syrup was then discontinued.

The colonies were checked periodically for A.F.B. The disease reappeared during the next two seasons in one colony after another until by the end of the third year the last of the six colonies had become so weak from the effects of the disease that it was destroyed to prevent it from spreading to the other apiaries. The results obtained in this apiary show the disastrous results that will occur when control measures are discontinued too soon or when inadequate measures for the use of the drug and manipulation of the colony are followed.

Apiary No. 3. This yard consisted of 30 colonies, over half of which were infected with A.F.B. They were donated to the Station because of the infection. All of the colonies not infected were given two-inch square sections of combs containing larvae infected with A.F.B. so that all of the colonies in this apiary were infected.

Two or three 5-pound pails of sulfa-treated syrup of the usual strength were given to each colony during the spring, summer, and fall for a total of six to nine pails. The syrup was fed when there was no honey flow of any consequence. The colonies were fed sulfathiazole in syrup for two years after the last signs of A.F.B. were observed when the feeding of sulfa was discontinued.

A few colonies showed reinfection the following year which indicated that the drug had not been 100 per cent effective in eliminating the disease from this apiary. All of the colonies were then requeened with queens from strains of bees resistant to A.F.B. The extracted super combs were sprayed during the winter with thin sugar syrup containing sulfathiazole. In addition, sulfa-treated syrup was fed to all of the colonies for two more seasons when the feeding of sulfathiazole was discontinued for the second time.

This apiary has been free from all signs of A.F.B. for the past four years. It is isolated in a narrow valley where the danger of reinfection from outside apiaries has been reduced to a minimum.

Ten supers of honey were taken from 10 different colonies in this apiary in the fall of 1953 and were placed on 10 colonies in three other apiaries that contained colonies not resistant to A.F.B. Not a single cell of A.F.B. has been found in any of these colonies during the season of 1954.

Apiary No. 4. This apiary originally consisted of 25 colonies. Of this group, one colony was found infected with A.F.B. in 1950, then two more were found infected in 1951 and finally an additional group of three were found infected in 1952. The three found infected in 1950 and 1951 were killed with calcium cyanide and the contents of the hive were burned in a hole in the ground. When the three infected colonies were found in 1952 it was evident to the owner that the disease situation was becoming serious and only a complete loss of all profit could be expected if this situation continued. All colonies in this apiary were then fed the usual mixture of one-half gram of sulfathiazole in each of two or three five-pound pails of syrup during the late spring, summer, and the fall of 1952. All signs of A.F.B. had disappeared in four of these colonies by fall of this year (1952) and only a very few scales of dead larvae remained in the fifth colony.

The winter supply of food for these colonies was reduced to a minimum or to about 40 pounds per hive. The food supply was reduced to insure its consumption during the winter months so that little or none of the infected honey would be left for late spring brood rearing (in 1953) when A.F.B. is most likely to reappear in a colony. All of the colonies in this apiary were fed two cans of sulfathiazole syrup in the spring and summer of 1953 during the normal dearth in the honey flow. One colony showed a mild infection of A.F.B. late in July 1953. There is, of course, no way of knowing whether this one infection did or did not come from an outside source. The disease again disappeared before winter as a result of feeding three cans of sulfa-treated syrup.

Only two cans of treated syrup were fed to these colonies in the spring of 1954. The apiary remained free of the disease during the entire season. None of the colonies in this apiary are known to be of resistant stock. The success of the drug in this apiary is attributed both to the elimination of the contaminated honey during the winter and to the feeding of sulfathiazole treated syrup to both infected and to those that appeared to be free of the disease.

Apiary No. 5. This was the largest of the group and contained 36 colonies when work with A.F.B. was started. Five colonies found to be infected with A.F.B. in June 1953, were dusted with sodium sulfathiazole and powdered sugar mixed to form a 50-50 dust. The dust was blown above and below the combs or between each super but the combs were not removed from the supers while being dusted. These colonies were dusted four times during a period of ten weeks.

At the end of this time, two colonies showed some improvement but the others showed very little, if any, improvement. The use of the dust was discontinued in all but one colony. The four were then fed sulfa-treated sugar syrup and these colonies soon began to show a rapid improvement. The one colony not given syrup was again treated with dust by blowing it directly into the brood after the combs had been removed from the hive. All the dusted brood was found dead at the time of the next inspection. The dust had apparently killed the brood. Some eggs were found in one comb but no larvae developed from them. The colony was destroyed in October because of its weakened condition.

Another group of four infected colonies in this apiary was provided with a 5-pound glass jar of water containing one-half gram of sulfathiazole in June 1954. Two were fed above the inner cover and two at the entrance. The colonies showed some improvement during the next four weeks but control seemed to be only of a limited nature and temporary. For this reason, the feeding of sulfa in water was discontinued and its use in sugar syrup was again reverted to, the same as when the dust was used as a treatment. These hives are being treated for the disease again this season.

Apiary No. 6. This apiary of five colonies is owned by W. W. Clarke and was worked co-operatively. The five hives were filled with combs containing scales of A.F.B. on April 17, 1954. The combs used were the combs left in hives (not in the Clarke apiary), when the colonies had died of A.F.B. One hive of this group contained three combs with sealed honey along the top bars. Package bees were placed in the hives and they were fed sugar syrup containing one-half gram sulfathiazole per five pound pail of syrup. Three colonies of this group remained free of A.F.B., one showed a very mild case of A.F.B., while the one with some sealed honey developed a somewhat fairly heavy infection of A.F.B. after the feeding of treated syrup had been stopped, temporarily, in late May. All feeding was stopped in June when the honey flow started. The colony that developed the heavier infection indicated for the second time, the danger of leaving sealed honey in an infected hive without removing the honey while the colony is being fed sulfathiazole.

Eggs and young larvae only were found in cells containing scales; no mature larvae were found in these cells. Mature larvae were found only in cells from which the scales had been re-

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moved. This condition showed that the nurse bees removed the young larvae from the cells containing scales. This reluctance on the part of the bees to permit larvae to develop to maturity in cells with scales retarded the development of the colonies for the first few weeks. These colonies did develop to the point where they all produced a good surplus of honey before the season was over. We do not, however, recommend that combs containing scales of A.F.B. be used for package or other colonies but that they be destroyed.

This work as carried out in the six apiaries over a period of ten years indicates that A.F.B. can be eliminated from an apiary through the use of sulfathiazole when the drug is used as indicated below:

1. Providing the infected colonies are fed sulfa syrup containing one-half gram sulfathiazole to each half gallon of syrup and are fed at least three five-pound pails of syrup each spring, summer, and fall when the honey flow is light or the bees are not gathering nectar.

2. Providing all honey in infected colonies is consumed by the bees or is removed by the beekeeper during the time sulfathiazole is being fed the colony.

3. Providing all scales of A.F.B. are removed from the combs by the bees or all combs containing scales of A.F.B. are removed from the colony by the beekeeper while the colony is being fed sulfathiazole.

4. Providing infected colonies are fed sulfa syrup for at least two years after the last infected larva were observed in the combs.

5. Providing infected colonies are removed from out-apiaries and taken to a hospital yard for treatment and extracted combs are returned to the hospital yard for at least two years after the colonies have remained free from disease.

6. Providing neither supers nor any other equipment is removed from infected colonies and given to those free from the disease while the infected colony is being treated.

This work also indicated:

1. That disease resistant stock will help cure A.F.B. but is not essential.

2. That all combs containing scales of A.F.B. should be burned or rendered for wax and be replaced with clean combs or with sheets of foundation.

3. That colonies found infected late in the season or after August 1st should be destroyed rather than treated, especially so, when the infection is fairly heavy.

4. That it is safest to destroy the occasional infected colony in areas that are relatively free from disease rather than treat them with sulfathiazole.

5. That there is danger of disease spreading from an infected colony to other colonies by drifting, robbing, or through the movement of equipment when the infected colony is treated in an out-apiary or in an apiary where the treatment is discontinued in less than two years after the last signs of the disease were observed.

The third problem or the one regarding the effective use of the drug by beekeepers can be answered only in time by the beekeepers using the drug. It is evident that some will use it carelessly and cause a heavy loss to themselves and to their neighbors through the spread of the disease. Others have been observed to do an efficient job of controlling A.F.B. with the drug. It seems unfair to those who can and will use the drugs effectively to be penalized because of the few who are careless.

It is possible that the observations of apiary inspectors and extension specialists as they watch beekeepers using this or other drugs, will provide the answer to this question. The best approach may be to have these two services provide the beekeepers with a set of directions for the use of the drugs and then keep the apiaries concerned under observation until definite results are obtained in one direction or the other.

Our Cover Picture

HERE IS a giant swarm that was photographed in an apiary owned by W. L. Coggshall of Ithaca, N. Y. All of the supers are covered by the swarm. Photo by Benson E. Gabbert of Auto, West Virginia.

Queen breeding

MILTON STRICKER, Annandale, N. J.

THREE YEARS in commercial queen rearing does not entitle me to write an article on the subject. Even though I have been selling my stock for a comparatively short time, I've been breeding queens for over 20 years.

My first few colonies were in an area where I got little or no honey, while my neighbor got over a hundred pounds per colony. I begged some eggs from him, bred a few queens, and was head over heels in the most fascinating phase of beekeeping—queen breeding.

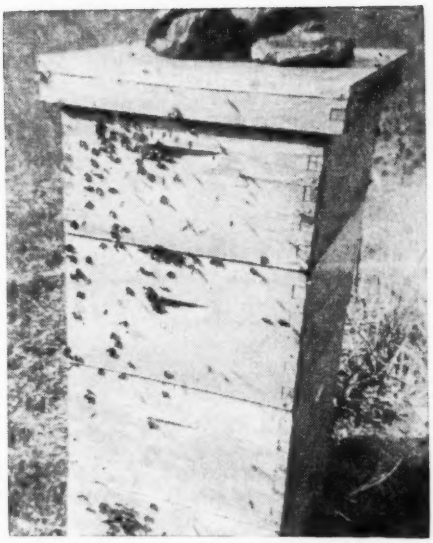
As a hobby, I poured more and more of my time in breeding queens for my pollination business, and often, though I thought I was gaining nothing, I found that each little step was an improvement, even though it was so small it was often unnoticed.

When European foulbrood swept through South Jersey in the early 40's, I bred for resistance, combining with the best production strain I had developed up to that time, and my hobby paid dividends. My colonies were able to combat this disease and do their pollination chores in the European area, while other colonies were dying shortly after being moved to this area.

This and other results are not phenomenal. Anyone can raise queens, and keep raising better queens each time he tries. If you are interested in honey production, and you have one colony that produces so much more than the others in the same yard, try breeding a few queens from her eggs. Don't worry about the method. Use Alley's, Doolittle's, or your own, whatever you can do best. Don't worry about the drones where you are making the matings. After all, this is only a start.

Improving Your Stock

If the few daughters you raise impress you, get yourself a yard where bees are few and far between. Populate it with your breeder and her drones, or some other strain of drones you like and raise a few queens. It's as simple as that and you are on your way to getting your honey yard headed with queens of a honey-producing strain.



Queens can be raised over colonies.

If there is something else, such as color, gentleness, low temperature flying, long tongues that interest you, breed for these. You have only to start out to see the great things you can accomplish.

If nothing in your outfit suits you for breeding purposes, buy a few queens and test them. Who knows what you'll discover.

If you haven't time or inclination to try to raise your own better stock, talk to your local queen breeder, who will tell you to bring over a frame of eggs from that prized breeder, and he will raise you a few queens, because he is always on the lookout for something good, and since he will be using his drones for your mating, he will probably test them for you. After all, there isn't a good queen breeder in the business who isn't looking for a queen that shows just a little more of these desirable traits that he is interested in.

AS FOR THE testing, you don't have to be a scientist to prove to yourself whether your queen is worth trying in a colony. If you raise this "hopeful" in a nuc box or over a normal colony, let the queen lay awhile. Notice her brood pattern. Is it solid,

or is it scattered? Are the cappings slightly convex or are they concave? After laying a few days, is the queen large and well filled with eggs? Does she run on the combs when you disturb her? Altogether, is she worth trying in one of your colonies? If you think she is, and you will have no trouble deciding, dequeen your present colony. Smoke it well and unite the couple frames of brood the new queen has laid and her bees. If there is no honey flow, add a feeder can of sugar syrup, then introduction can be effected without trouble.

To go into more detail about the type of introduction: Examine the colony to be requeened for disease and if disease free, kill the old queen and take out three frames, leave an opening in the center of the brood nest and after smoking the colony well, add the three-frame nuc you have raised in this open space. Smoke well, and close the colony. Some beekeepers go to the trouble of uniting with newspaper, or laughing gas, but these refinements are not necessary if you have some nectar coming in. If not, stimulate a honey flow by adding a generous amount of sugar syrup. If you like, you can add this syrup the day before you get ready to requeen by this method.

If this requeening is done in the fall, you'll have a young queen for wintering and your colony should show its characteristics when compared with the others during the summer honey flow. If, with the same management as the others received, this colony gets only one frame of honey more than the best in the yard, you are on the right track. Go on with your testing. You are accomplishing something.

When I think back over the years and try to enumerate the queens I have tested, it seems like those whose heads were pinched when I condemned them would make more honey than those I accepted for further testing, but even if it were true, it would still be the most profitable thing I have ever done. At least after all these years of testing, when friends persuaded me to put my strain on the market, I had something that I wasn't ashamed of.

In this day of advanced science, the farm has kept up with milk-producing cattle, egg-producing poultry, wool-producing sheep that would make our ancestors find it hard to believe their eyes if they were suddenly transported back to earth. But, would their eyes pop at the work of our queen bees?

Yes, they would marvel at our equipment, at the yields made possible by this equipment. But, suppose the work of our best queens were compared with the b r o o d patterns of queens produced by Doctor Miller, A. I. Root, Quinby, and others, who were students or good queens. The answer is obvious. We had better continue our breeding program and our testing program.

This tirade is not meant to infer that we haven't made strides. Certain hybrids on the market are excellent. The A.F.B. resistant strain is a long step in the right direction, but we need more of these steps.

E.F.B. is now a problem. Diminishing flora demands a bee that is a better gatherer than ever. Perhaps we need to develop along lines that will allow one man to keep more bees with less attention in these times of diminishing returns.

Altogether, it is up to all of us to help ourselves to do just this, not only because we need to do it, but because we can do it.

Alan Root (left) and Mr. N. M. Yeater, Bee Supply manager of The Diamond Match Company of California pause for a few minutes by the scale hive. Mr. Yeater stopped at The Root Company while in the East on business.

Honey house for a small apiary

HOWARD A. PIKE, Apiary Inspector
Rhode Island Department of Agriculture

IT IS QUITE evident that the beginner with one or two colonies will not have much use for a "honey house" of any great capacity; but a workshop of some kind for the storage of equipment and for the assemblage of hive parts is very handy. If construction of a building is possible, it is well to build it as large as funds and time will permit. Equipment will grow to large proportions in a short time providing the beekeeper has taken his bees seriously, has been successful, and is adding colonies.

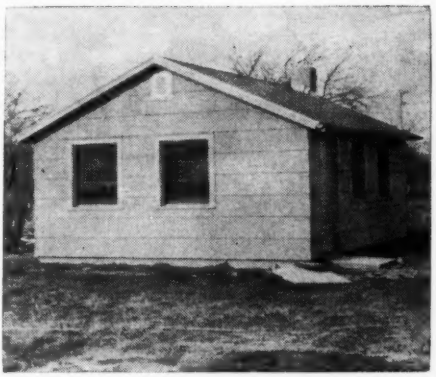
No attempt will be made here to give building plans for honey houses. Individual requirements will determine what should be constructed or made over to suit the needs. A few suggestions here may be of some help in avoiding mistakes.

Beekeepers too often try to squeeze a lot of equipment into a small space and then are compelled to work in cramped quarters. Bee equipment takes up a lot of space as most of it is bulky. The beekeeper will derive more pleasure from his work with the bees if he has some space set aside where all the parts can be kept in an orderly manner, with plenty of room to carry on assemblage of the equipment and space for extracting and bottling the honey.

Keeping Robber Bees Out of the Honey House

As a rule, extracting comes at a time when most of the honey plants have stopped yielding nectar and bees are cross because of the sudden letup of honey flow. This may cause robbing by the bees.

To keep the bees from entering the honey house, all openings should be screened thoroughly and it should have a swinging door. It is much better to tack the screen on the outside of the window frame, leaving an open space of about one-quarter inch at the top so that if any bees are inside the house they will crawl up to the top and go outside. Run the screen a few inches up on the top casing from the opening and use some quarter-inch wooden



Honey house of R. W. Buffham of Racine, Wisconsin.

pieces to hold the screen away at intervals from the top casing. No bees are apt to come in, but they will go out as the tendency to always crawl upwards will take them to the openings in the top of the screen.

The windows should slide horizontally rather than vertical so that when the window is open the bees will not be imprisoned behind the glass. This arrangement will also give a better circulation of air in hot weather. Lots of light and good ventilation is advisable for hot weather.

There should also be some provision for heating in the winter as this is the best time to nail equipment together. Other bee work is then at a standstill. A stove, probably a cook stove, will

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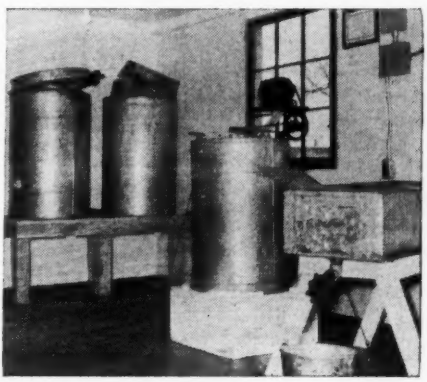
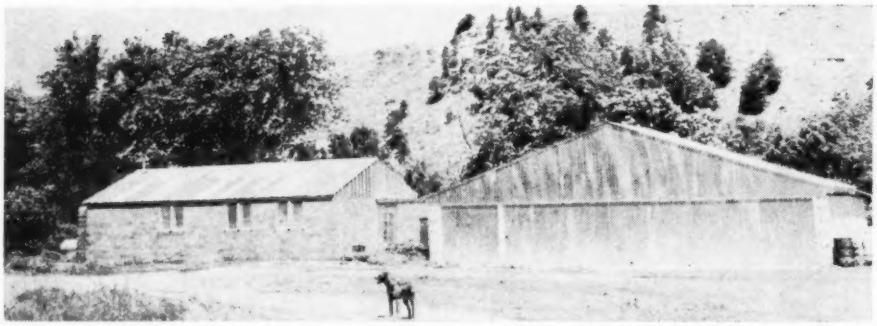


Interior of the above honey house.

Another honey house

CHARLEY W. MOOSMAN, Valentine, Nebraska

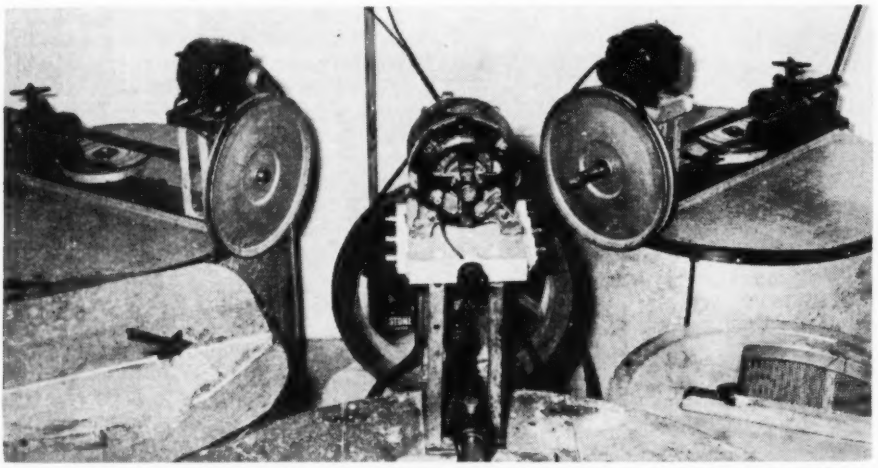


The honey house and hangar are joined by an alleyway that also serves as a power house. The truck door is at the far end of the hangar.

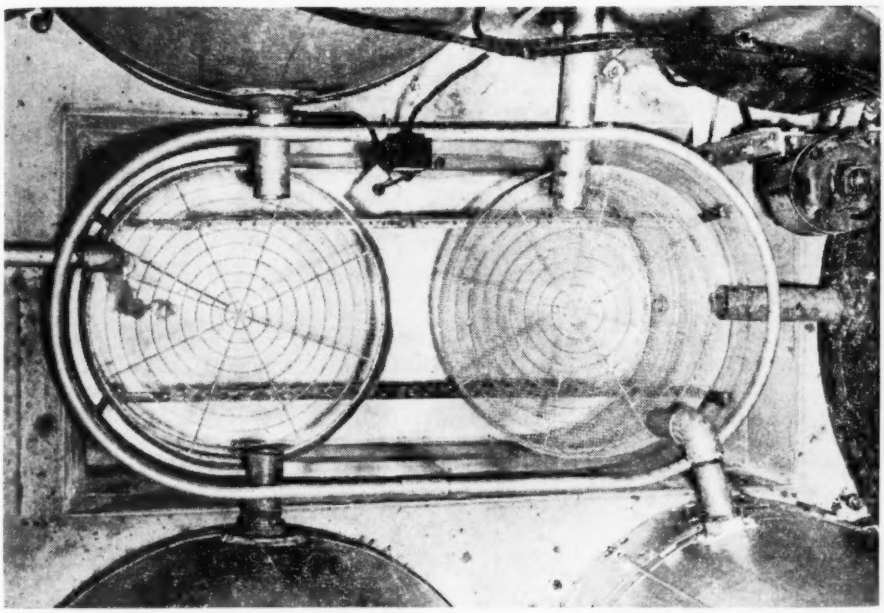
A HONEY HOUSE is an essential part of any bee outfit. Two years ago I was finally able to build one that so far answers my purpose pretty well. Prior to its construction my plane hangar served as my honey house. However, it was very crowded and hard to keep clean. A hand truck was out of the question and everything had to be loaded and unloaded by hand. The hangar is still used for storage as the honey house is close to it and they are joined by a covered alleyway.

The honey house is not very big, 24 by 44 feet, and is of concrete block construction with a metal-covered roof. It has a truck dock inside, a room for heating the honey before extracting, an extracting room, and the main room for the honey tanks and where the supers of honey are stacked when they are brought in. During the winter this main room is a work and repair shop also. Drip trays or pallets are used for supers of honey, piles of empty supers, and for stacking cans of honey. Nearly everything can be loaded or unloaded with the hand truck.

The heating room is heated with a gas space heater near one end and a fan on the floor at the other end. The supers of honey that go to the heating room are stacked on lifts that give about four inches of space between the drip tray and the bottom super for an



Three extractors and two driers are grouped around a common sump. The switches, seven of them, are mounted on the large extractor motor base.



Looking straight down on the sump, which sets in a pit in the floor. The extractors and driers drain into it through screen strainers, that are easily taken out to clean. The pump switch with float is on the far side.

air passage. This gives fairly even heat for all the honey when the supers are stacked four or five high. Before the fan was put on the floor the combs of honey in the top supers would be ready to melt down before the honey at the bottom had even started to warm up.

The extracting room is not very big and is easy to keep clean. It has three extractors, one 50-frame and two 30-frame, and two mechanical cappings driers, all draining into a common sump. The honey pump, near one end of the sump tank, has a worn gear reduction and turns about 50 rpm. It has an automatic switch but when two fellows are uncapping it never shuts off.

The uncapping is done with electric planes that have steel edged copper blades. They get just as hot as the

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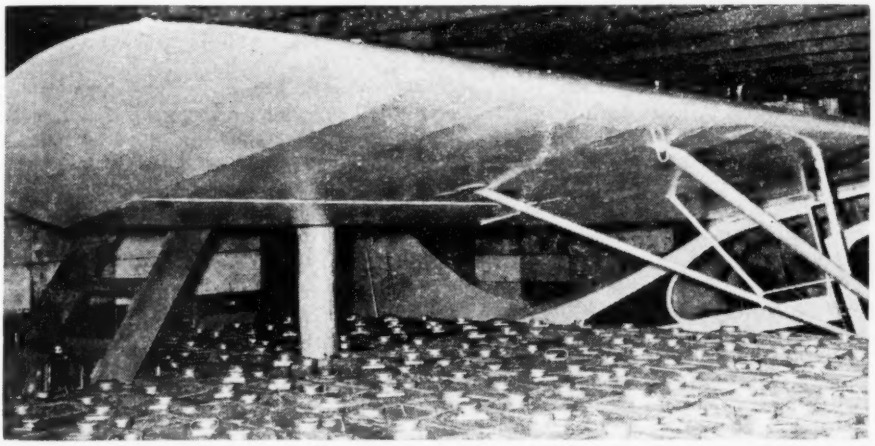

No space is wasted. Full cans of honey, stacked three high, under the wing of the plane. Empty cans are upstairs, and empty supers can be seen back of the wings on both sides of the tail.

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There is a future in honey jelly

E. L. Rhoads, Central Division Manager, Sunkist Growers

Start children on honey jelly and a big market can be developed.

WE ARE already quite familiar with the virtues of honey in the diet from a health standpoint, and the pleasure of its wonderful flavor, so there is no need in this article to elaborate on these things which are already so well known to producers and packers of honey. We also are aware of certain disadvantages in respect to the use of honey in that it is a viscous liquid and when used on bread, toast, biscuits, and such, tends to run off before it can be consumed, and creates problems for the housewife in that the fingers, table linen, and clothes can get sticky from the honey falling off of the item being consumed. This is not necessarily confined to children only. I observe that adults also have the same trouble. The use of table dispensers has minimized some of the difficulties of utilizing honey at the table.

If it were possible to have honey in a jellied semi-solid condition, it would seem that there would be some very definite advantages, in that once it is placed on toast, biscuits, bread, etc., it would tend to stay put. Further, no table dispenser would be needed and it could be used directly in the glass in which it is sold or turned out into a jelly dish at the table. Also, the jellied form would tend to make honey more readily available to bakers for use as a flavorful layer between cakes and for ornamentation on sweet rolls and such.

Early experiments with honey jelly were not totally satisfactory because at that time only pectins derived from apples were available. These pectins contained a substantial amount of apple flavor, color, and natural acid with the result that the honey jelly produced with them contained entirely too much tartness for taste. They had a modifying effect upon the flavor of the honey, in that the apple background flavor was present. The color of apple which is a tan color very materially increased the darkness of the original honey used. In recent years a very fine highly standardized form of citrus pectin derived from the white portion of oranges, lemons, and grapefruit is available, which contains neither added acid, color, nor flavor. The citrus pectin does not therefore modify the delicate color and flavor of the honey employed, making it now possible to produce very attractive honey jellies.

The formulas and procedures about to be given are those developed by Sunkist Growers, who are one of the world's largest processors of pectin which is used throughout the world by leading jam and jelly producers. Citrus pectin is a recognized ingredient in all pure jams and jellies and is permitted in the Federal Standards for jellies. The formula to be given owes all of its sweetness to honey. It is, however, necessary to incorporate a small amount of water with the honey in producing the final product so as to dissolve the pectin in the water, therefore, the soluble solids content of the finished jelly resulting from this formula will be approximately 65 per cent which is the most advantageous level at which pectin produces its geling action.

Directions

HEAT THE HONEY to 155° F. in a jelly kettle, or in a steam or water-jacketed pan. (Heat slowly to avoid scorching and the development of off-flavors.)

Honey Jelly Containing 75 per cent Honey

Water	(about 1 gallon or)	8 pounds
150 Grade Exchange Citrus Pectin Rapid Set No. 430		2½ ounces
Honey (extracted or strained)		24 pounds

Std. Tartaric Acid Solution (See footnote below) Approx. 1 fl. oz. or adjust pH to 3.3-3.6
Yield: Approximately 32 pounds.

In another kettle, heat the water to about 18° F. (Open-fire or steam jacketed kettle may be used.)

Remove a pint or so of the honey from the kettle into a sauce pan or small bucket and stir the dry pectin into it, making a smooth paste. When the pectin and honey have been well mixed, pour into the hot water and rinse the small pan or bucket with the pectin solution until all the honey-pectin mixture has been transferred to the water solution. Stir and heat until the pectin is completely dissolved and be sure there are no lumps remaining. (A baker's wire whip is recommended for stirring the batch.) Heat just to boiling.

Add the pectin solution at once to the honey, which should be at 155° F. The batch should then come to a temperature of 170° F. or slightly above. Do not heat hotter, but be sure the temperature is at least 170°F.

After the containers are ready, stir the standard tartaric acid solution into the batch, avoiding the incorporation of an excessive amount of air. Keep the temperature of the batch at 170° F.

Immediately fill the batch into small containers, of desired size. (Be sure the temperature of the batch is 170° F. when poured into containers.) Cap at once while hot. Air cool promptly before labelling so honey jelly can set before being disturbed.

When the preserver wishes to package these jellies in large containers, 10 to 30 pounds, it will be necessary to increase the amount of pectin by 20 to 30 per cent. This is due to the fact that the jelly must be more rigid in the large containers in order to withstand commercial handling.

Note: It has been found that when honey or honey jellies are heated much above 170° F. as in the usual jelly-making procedure, the products develop a toughness, a darker color, and a rather strong flavor after a few weeks of storage. When 170° F. is the maximum temperature attained, the materials are fluid enough for proper mixing to be accomplished with freedom from entrapped air bubbles, and at the same time proper sterilization may be effected.

Standard Tartaric Acid Solution— Dissolve one-half pound tartaric acid crystals or powder in one pint of hot water. One fluid ounce of this solution contains approximately 0.392 ounces of tartaric acid.

From the standpoint of equipment, most anyone who is in a position to pack honey in glass would have the necessary equipment to produce honey jelly, and the process of producing honey jelly is quite simple. It is especially important, however, that the temperature suggested in the preceding directions and formula be observed closely to avoid adversely affecting the color and the flavor of the honey used. This is no place to use up buckwheat or other dark honeys for it takes good light-colored, mild-flavored honey to begin with to produce a mild flavored attractive honey jelly for table use.

The sale of honey jelly through grocery stores and roadside stands, and those doing a mail-order business would appear to offer an opportunity to move additional quantities of honey into consumption and at attractive prices.

In the United States, approximately 300 million pounds of jellies are consumed annually so there can be no question as to acceptance of the American housewife of jelly as such. The U. S. Department of Commerce reports that total sale of preserves and jellies in the United States for the year 1953 was 701 million pounds, and that the housewife spent $155,070,000 on preserves and jellies.

It would seem to the author that honey jelly might well become another one of the popular flavors to the ultimate advantage of the beekeeper and the consuming public.

XUM

Meet the champions: Miel Carlota!

ROBERT B. WILSON, New York City, N. Y.

Part II

(Continued from June)

The apiaries are visited by crews like this to do the work.

IN AN INDUSTRY as universal as beekeeping, it's a hats-off accomplishment to get to the top and to have done it in the brief space of 12 years in a foreign land where the difficulties of learning a new business were coupled with the necessity of mastering a new language and understanding strange customs. This is strictly championship stuff. Let's make a few inquiries to see how it was done.

Was it being in a virgin territory where all one needed to do was put out the bees, super them, and bring home loads of honey? Bees were brought to this area from Spain in the early part of the 16th century and had been kept there continuously since, but there was no commercial beekeeping when Miel Carlota was started. Furthermore, this rare combination of business man and medico had been advised by the natives not to waste their time on bees. The yields they were to get by good beekeeping had never been dreamed of by anyone, so actually, they were pioneers in discovering for themselves, and for Mexico, that this was great honey-producing country.

After that original purchase of five colonies, 100 more were bought in box hives and transferred into jumbo hives. Transferring bees, as anyone who has done it will concede, is a fine way to learn a lot about bees fast, and when the great effort of those first six months of 1943 was rewarded with 37 pounds of honey per colony, their enthusiasm was boundless. But the early years had their trials and disappointments. The year 1943 had been so successful that they considered a big adventure early in January, 1944. Should they not move their bees to a great orange growing area?. The anticipation of colonies filled high with orange blossom honey was overpowering, so the bees were moved. But, a short time back, extraction had been too close and colonies had become reduced to starvation rations. Even though the orange blooms yielded some nectar, the bees were too weak to profit by it. Some had to be fed to

be saved and so a great lesson was learned, one of the cardinal principles of beekeeping: **An abundance of honey must be left on the hives at all times to be assured of strong colonies and good crops.**

The experiment with the orange groves cost more than the previous fall's honey crop, a disappointment—but not big enough to discourage these people. Beekeeping was now in their blood and when the bees built back up, increase was made, up to 250 colonies, and the honey harvest furnished a quick reward: 92 pounds per colony!

A notable year was the next, too, 1945. Four hundred new colonies were made with a yield of 125 pounds per colony. The honey flows were heavy but so was swarming which meant much increased work and a lower yield than there should have been. Swarms that issue in mountain outyards are almost always lost swarms, too. Here was cause for thought.

It is interesting to reflect on the thinking of these two gentlemen as they were building up this great enterprise. Here at the end of their second full season they had been reading everything they could get their hands on about honey bees, in Spanish, German, and English, and, of course, were aware of the variables within bees that permit of selection and breeding. It was this excessive swarming that started them on one of their projects which has added so greatly to their stature: **Queen breeding.**

From then on, no queen was ever used for breeding purposes that came from a colony that had swarmed and, only colonies of the heaviest production and free of disease were used.

Queen rearing, the poetry of beekeeping as it has been called, became part of the operation. It is heartening to see what selection will do in the brief span of 10 years. In the 1954 season, a bad swarming year, less than one per cent of their colonies swarmed, and in 1953, a normal swarming year, only five swarms issued from 10,000 colonies.

Between 20 and 25,000 new queens are raised each year. An interesting sidelight on methods used is the way they add bees to swarm boxes and mating nuclei when needed. Bees are shaken into a box about 18 inches square which is partly screened top sides and bottom, and when filled with bees is submerged momentarily in water (see photo). The wet bees, unable to fly, are ladled out where needed—soon dry out and are none the worse for their dunking.

Putting bees in water for filling swarm boxes and mating nuclei.

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Beautifully appointed display room for Miel Carlotta products.

Their principal problem with queen rearing is keeping an adequate population of drones in January and February.

The bees are Italian hybrids, a cross between Italians and the black bees of Germany and Holland, but mostly Italian in appearance and characteristics. The author handled them in a number of apiaries. They are not especially gentle—nor do they want them that way as it would make honey too easy to steal in this country. Some honey is stolen each year, but never in important quantities.

Apiary Management

DR. SPECK is in charge of production. For the 210 apiaries averaging about 60 colonies, there are six crews of eight men, each with a foreman of proven reliability and experience, each crew equipped with a six-ton truck. Inside the apiary, the crew works as a unit, some men using the smokers and taking off covers, others examining colonies for needed attention, others bringing equipment to and from the truck. Efficiency of operation is well planned. The boys are in and out of an apiary in no time. Dr. Speck patrols the operation in his car or in a pick-up truck which discourages the very human tendency to loaf.

The apiaries are at elevations varying from 600 ft. to 10,000 ft. and, as might be expected, the flora varies considerably over that range. As a consequence, there is much moving of bees to take advantage of local honey flows. Yields per colony, they have found, are not influenced by altitude. The production is about the same at all levels.

Part of management is requeening. Here in south central Mexico, queens lay throughout the year making annual requeening mandatory for maximum production. Mated queens from their own queen yard where the male population is carefully controlled, are caged this morning and introduced today, with little shock or injury to the queens, with a high percentage of acceptance. It would seem that they have worked out to perfection all things of importance.

The supers used are the shallow (six inch) type for ease of handling in the apiary and the extracting room. They and the hive bodies are painted in many colors as an aid for the returning bees to identify their own hives.

(Continued on page 447)

Quick and good

MRS. BENJ. NIELSEN
Aurora, Nebraska

Mock ham patties. — Photo courtesy of Kellogg Co.

"EVERYONE TALKS about the weather, no one does anything about it." Well perhaps that isn't quite true; some folks take trips where cooling breezes blow; others work, live and play in air-conditioned comfort. Not too many of us are so blessed. We must work and play, taking the weather as it comes. So we plan to get a maximum of results with a minimum of effort—at least in our cooking. In this field honey really comes into its own! You can prepare goodies in the cool of the morning, knowing that holding or storing will actually improve the flavor; secure in the knowledge that with honey as an ingredient our bodies will receive the quick energy we need even though appetites may lag as old Sol really bears down.

Prepare the lucious meat patties shown in the accompanying photo, store in the refrigerator until needed, then pop 'em in the oven! Yum! Keep plenty of cooky dough and honey-way dough for rolls in the refrigerator. And do serve honey sweetened lemonade and coffee, hot or iced. Honey sweetened ice creams furnish a maximum of nutrition, become velvety smooth, and the flavor is super with a bit of waiting in the refrigerator trays. Toppings may be stored in the refrigerator indefinitely. This honey butterscotch topping is super!

Mock Ham Patties

One 12-ounce can luncheon meat, 2 cups cornflakes, 1 egg, slightly beaten, ¼ cup milk, 1 teaspoon Worcestershire sauce, 1 tablespoon prepared mustard, 2 tablespoons flour, ¼ cup brown sugar, ⅓ cup honey, ⅔ cup water, 2 tablespoons vinegar, and 6 whole cloves.

Grind luncheon meat. Crush cornflakes slightly. Combine ground meat, crushed cornflakes, egg, milk, Worcestershire sauce, and mustard; mix well. Shape into 6 patties. Place in shallow pan. Bake in moderate oven, 350 degrees F., about 20 minutes. While patties are baking, combine flour, brown sugar, honey, water, vinegar, and cloves. Cook over low heat, stirring constantly until sauce thickens. Pour over patties. Continue baking about 15 minutes longer. Yield: 6 servings.

Cottage Cheese Salad

Two packages orange jello, ¼ cup honey, 1½ cups boiling water, 1 cup cream, whipped, 1 cup crushed pineapple, 1 carton cottage cheese.

Dissolve jello and honey in boiling water. Chill until syrupy. Add whipped cream, pineapple and cottage cheese. Chill. Serve on lettuce with salad dressing.

Honey Butterscotch Sauce

One and ½ cups brown sugar, ½ cup honey, 4 tablespoons butter, and ¾ cup evaporated milk.

Bring sugar, honey, and butter to the soft ball stage, 235 degrees F. on a fat or candy thermometer, which takes about six minutes. Partially cool, add the evaporated milk, stirring constantly. Sauce will keep in the refrigerator indefinitely.

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Part VII

GEORGE P. GEORGHIOU, Nicosia, Cyprus

(Continued from June)

1926 A.D.— Watson (U.S.A.) introduced his technique of artificial insemination of queen bees. In this year he offered a demonstration of his method at Cornell University, Ithaca, New York.

Watson's method marked the beginning of distinct progress in this field. Watson used a straight syringe and a special manipulator attached to the stage of a dissecting microscope. The queen was fastened to a special "cradle". Out of 42 queens treated, 24 showed some degree of insemination, or 57 per cent of all treated. The next year 65 per cent of the attempts were successful and 72 per cent in the following year.

Publication by The A. I. Root Co., of "Honey Plants of North America" by **John H. Lovell.** Lovell was the author of "The Flower and the Bee: Plant Life and Pollination".

The first renting of bees for orchard pollination, was done by **C. F. Turnipseed,** Chief, Iowa State Bee Inspection. He rented 186 colonies. Later in the season, Boston Bros., Washington, rented 200 colonies for $5.00 and $6.00 per colony.

1927 A.D.—Amoeba disease of bees, caused by a one-celled protozoan parasite Vahlkampfia **(Malpighamoeba mellifica)** was recorded for the first time in the United States. The disease had been discovered in Europe a few years before.

Publication of the first U. S. Grade and Color Standards for comb and extracted honey.

1928 A.D. — Establishment of the **American Honey Institute,** with its offices located in Indianapolis, Indiana. It is a non-profit organization, established to promote the cause of education in honey as a food, for the advancement of the honey industry and the welfare of mankind. Moved to Madison, Wisconsin in 1932.

Fabian and Quinet, reported that the primary source of the sugar tolerant yeasts, which are responsible for the fermentation of honey, is from the flowers and the soil through the nectar and the bees.

Development of the Dyce process for finely granulated honey, by **Dr. E. J. Dyce.**

Jay Smith announced a plan for vaporizing formalin in a tight chamber, in which the foulbrood infested combs were exposed to the gas for a considerable time. It was shown that when properly done this method, like others (1922) was effective. Many thousands of combs were treated. Several failures resulted, however, and so many disagreeable effects were produced that beekeepers soon lost interest.

1929 A.D.—Alpatov (Russian) concluded that the Caucasian bees have longer tongues than the Italian bees. He extended his studies to the U. S. as well.

1930 A.D.—In the Iowa State Apiarist's Report for the year 1930, are mentioned the names of 101 periodicals relating to bees, which have at one time or another appeared in the United States. It also mentions 10 Canadian magazines.

E. F. Phillips (U.S.A.) points out that bees return to a definite place—a few neighboring trees or a small patch of some other flower—on successive trips for several days. He suggests that varieties of apples used for cross pollination should be close together, that bouquets must be placed throughout the orchards, and that it is useless to place them near the hive (see 1939, 1947, and 1950).

1931 A.D.—Dr. E. J. Dyce, working on honey granulation reported that the temperature most favorable for granulation is between 50° and 65°F., with 55° to 57° suggested as the temperature favorable for most honeys.

Publication of "Beekeeping in Antiquity" by **H. Malcolm Fraser** (England).

1932 A.D.—Movement of the offices of the **American Honey Institute,** from Indianapolis, Indiana to Madison, Wisconsin.

Improved method of driving bees from supers with carbolic acid developed by **Charles Mraz** of Middlebury, Vermont. Reported in the July, 1932 issue of Gleanings.

1933 A. D.—R. E. Lothrop and H. E. Paine, report that removal of the colloidal materials from honey by ultra-filtration tends to improve the color and clarity of honey.

1934 A.D.—Rolleder A., in tests with 29 pairs of boys found that two-thirds of them fed with with two tablespoonfuls of honey daily for six weeks, showed an average increase of 8.5 per cent haemoglobin, and two-thirds without honey, showed a marked fall in haemoglobin, the results being reversed when the feeding of the pairs of boys was reversed.

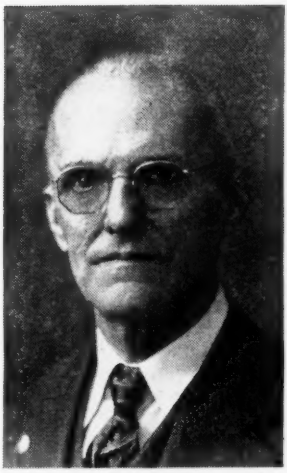
Experimental work on the resistance of honeybees to A.F.B:, was inaugurated by **O. W. Park, Frank C. Pellett** and **F. B. Paddock,** at the Iowa Agr. Exp. Station, Ames, Iowa.

1935 A. D.—Publication of **Dr. H. C. Chataway's Tables** showing the relationship between various hygrometer scales and refractive index to moisture content and weight per gallon of honey. The moisture content equivalents shown in Chataway's Tables have been generally accepted in U.S.A., and have been made official in Canada.

Dr. Bodog F. Beck published the "Bee Venom Therapy".

1936 A.D.—C. L. Farrar, introduced his system of two-queen management of colonies.

The O.A.C. honey strainer was developed at Guelph, Ontario by **W. G. leMaistre, E. C. Martin,** and **E. J. Dyce.** W. G. leMaistre described the strainer in the January, 1937 issue of the American Bee Journal.



F. C. Pellett

E. C. Alphonsus, U. of Wisconsin, claimed that the prime cause of dysentery in bees, is an excess of moisture in the food that they receive.

The **National Auxiliary** of The American Honey Institute was organized in San Antonio, Texas, November 23, 1936, at the David Crockett Hotel. Mrs. Ethel Krebs, Sacramento, California was elected President, and Mrs. Florence Bennett, Birkenfield, Oregon, Secretary-Treasurer. The purpose of the organization was to plan and build special interest programs for the ladies attending the National Convention. Another object was to promote and encourage beekeeping by placing special emphasis on the use of honey in the home.

A new constitution and new name, "The National Auxiliary of the American Honey Industry" was chosen on November 7 to 10, 1939, in Sacramento, California. On October 22 to 24, 1940, in Omaha, Nebraska, the name of the organization was again changed to "The National Beekeepers' Auxiliary". In San Jose, California, January 26 to 31, 1953, the constitution was once again revised and amended, and the name changed to "The American Beekeeping Federation Auxiliary". No new changes in title or constitution have occurred since.

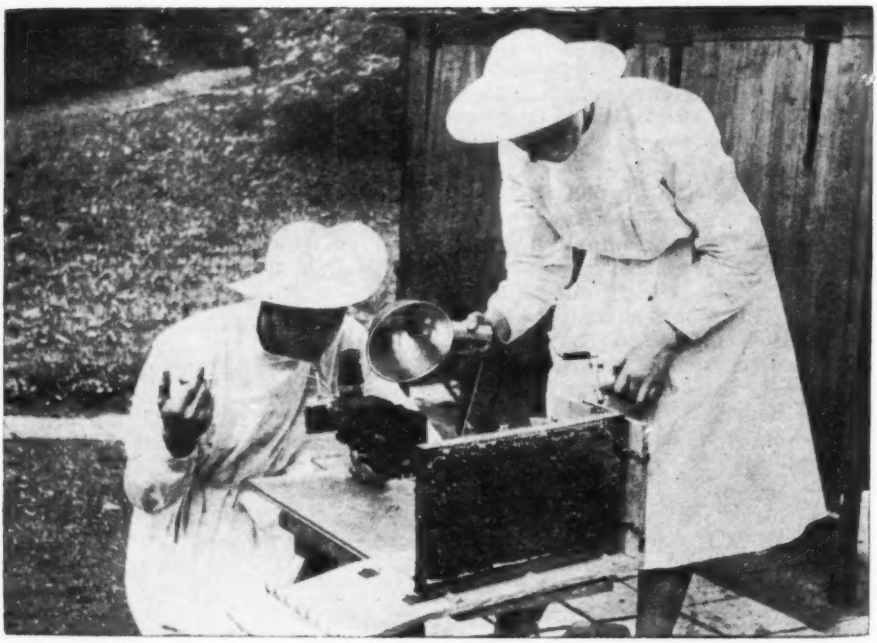
1937 A.D.—Enactment of "The Bee Act" of Ontario, Canada, pertaining to general regulations on beekeeping, diseases, etc.

(to be concluded)

XUM

News

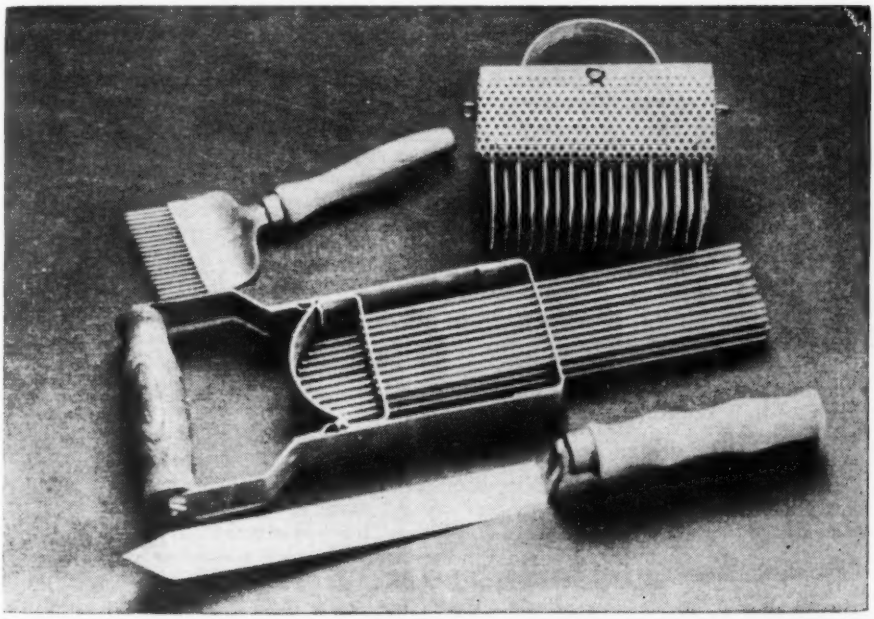
Miss Jane Levitre is shown presenting Mr. Dennis J. Roberts, Governor of Rhode Island, with a jar of local honey after the official proclaimed April 10th through 16th as "Honey for Breakfast" week. To the left of the Governor is Edward Hayes, Assistant to the Director of Agriculture. Next to Miss Levitre is William K. Davis, Publicity Manager for the Rhode Island Beekeepers' Association.—Rhode Island Development Council Photo.



W. W. Wittekind, noted German beekeeping photographer, and an assistant, are caught in the act of preparing some close-up photographs for Gleanings.

reel

While the police officer holds back a swarm of curious children, Henry J. Bittel, Cleveland, Ohio, is preparing to remove a swarm from a tree. This is an old job for Henry who makes a business of removing swarms from unwanted places.—Photo by Jerry Horton of the Cleveland News.



Here are four pieces of uncapping and extracting equipment used in the extracting of heather honey. After the cappings have been removed, the prong-like apparatus is inserted into the cells to loosen the heather honey which has the consistancy of jelly.
—Photo sent by Harry Vandenberg of La Grange, Ohio.

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Editorials

Eastern Apicultural Society Formed

AN HISTORICAL event occurred on June 18th at the University of Maryland when the Eastern Apicultural Society was organized. Nearly 250 beekeepers from 14 states and the District of Columbia were on hand to witness the birth of a new cultural and recreational beekeeping organization.

The honor of being the first president of this new society was given to J. Gaston Levitre of Woonsocket, R. I., who, with the aid of Bill Davis of Rhode Island, worked long and hard to make the Society a reality. The other elected officers are Henry Pool, Massachusetts, 1st vice president; Roy Stadel, Connecticut, 2nd vice president; and Mrs. Maxine Manchester, Vermont, secretary-treasurer. Bill Davis of Rhode Island was chosen as the Publicity Manager, and George Abrams and James I. Hambleton of Maryland were elected to the Advisory Board.

This new group invites beekeepers from all walks of the industry to support and attend future meetings which will be held annually. The next meeting is tentatively scheduled for the University of Rhode Island in 1956.

While many states were represented at the meeting in large numbers, it appeared that Massachusetts took the honor of having the greatest attendance of beekeepers from outside the state of Maryland. Inspired by the very capable Henry Pool and Aylmer, "the author", Jones, the Massachusetts delegation was quick to support the formation of the new society.

We of Gleanings wish much success to the new Eastern Apicultural Society and offer them our continued support. In behalf of the beekeepers who attended the organization meeting, we extend appreciation to George Abrams, Apiculturist, at the University of Maryland, and H. L. Kelly, president of the Maryland Beekeepers' Association, for working so hard to make the meeting the success that it turned out to be. More details on this meeting will appear in the August issue.

Swarms and More Swarms

IT WOULD appear that bad swarming seasons come periodically. Some years there are comparatively few swarms and during other years there is excessive swarming.

Most authorities agree that excessive swarming is due mainly to faulty apiary management. As a rule, swarms issue when bees are congested and need more room. Many beekeepers may not be prepared for a sudden honey flow and do not put on supers to provide comb space for incoming nectar. It is only natural that bees, under those conditions, will prepare for swarming. Beekeepers who secure the largest crops look ahead and put on supers a little in advance of the time they are actually needed, to be ready for any eventuality.

It is amazing what strong colonies will do in storing surplus honey when conditions are just right. Commercial beekeepers with a number of out-apiaries find it impossible to get all of the yards supered in a short time and have to put on supers in advance to keep ahead of the bees. The moral is, or should be, keep ahead of the bees by supering early.

Swarming is not all bad. It is nature's method for bees to increase their

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kind. We are told that there is a shortage of bees in the United States. For example, here in Ohio we have approximately 300,000 hives of bees, only one hive of bees for each 90 acres. There should be more hives to help pollinate farm crops.

Not all of the swarms that have issued this spring have been put into hives. Many of them have gone to the woods to find homes. These swarms will do their part in rendering a pollination service. If it were not for the swarms found in buildings and trees over the country, the pollination situation would be worse off than it is at present.

And so, the excessive swarming we had this season may be a part of Nature's plan to supply more pollinating agents in order that larger farm crops may be secured.

Differences in Seasons

IF BEEKEEPERS could know more in advance about what to expect in weather conditions and honey flows, it would be a comparatively simple matter to operate hives of bees throughout the season. As it is, we never know what is around the corner. In this section of Ohio, it has been said that the main honey flow from clovers usually starts between the 10th and 15th of June. Some years ago, in 1921, the main honey flow started the 21st of May and continued until August 1st. That was an unusually good year. We had rains periodically during the summer months to keep the clovers in prime condition for secreting nectar.

In 1940, we had very cool weather during late May, also during June. The bees did get enough nectar to keep brood rearing going. On July 1st the weather turned warm. Clovers were in prime condition and we secured a good crop.

In 1938, the honey flow in western Ohio began May 28th and continued during June and July, into early August. That was an exceptional year. We had some colonies that occupied ten deep hive bodies. You beekeepers in this area will remember that season. We may never see one like it again.

All this is by way of saying, we beekeepers should at least make an effort to have our bees in good condition and be ready, if possible, for any eventuality. In some instances, a good honey flow will creep up on us. Sometimes we are ready for a big flow and it doesn't come. At other times we may not expect a good honey flow and along it comes.

American National Honey Show

IT IS ESSENTIAL for the good of our industry to increase consumer interest in honey. One way to do this is to have honey attractively packaged on display at fairs. Quite a number of states and some counties have honey booths at their fall fairs.

During the past two years, the Minnesota State Fair at St. Paul, has sponsored the National Honey Show. Mr. C. D. Floyd, Apiary Inspector of Minnesota, was its superintendent.

This year the National Honey Show will be held in Illinois, and is sponsored by the Illinois State Fair. The dates are August 12th to the 20th. It will be under the direction of Carl Killion of Paris, Illinois.

There will be a number of entries of honey put up in different size jars, also comb honey. Trophies are being awarded by the various manufacturers of bee supplies and honey packers. Further details are appearing in the bee journals.

The importance of such a show cannot be overemphasized. Thousands of people from all parts of the country, visiting the Illinois State Fair, are likely to see the display and will have their attention called to honey, nature's oldest and choicest sweet. Such a show should increase consumer demand for our product. The per capita consumption of honey in the United States is between one and two pounds. In Canada it is almost three pounds and in New Zealand it is about five pounds per capita. A National Honey Show each year should surely help to increase the per capita consumption of honey in this country

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Live and Learn

by Propolis Pete

SOONER OR LATER, everybody who keeps bees will run into the condition known as "laying workers". This condition is fairly rare, and is of no great economic importance, but it does happen sometimes when a colony becomes hopelessly queenless. There is nothing much that you can do about it. Usually the bees will not accept a real queen while the laying workers are present, and the colony might just as well be written off as a loss. You can salvage something from the ruin by uniting them with a queenright colony, or rather, uniting a queenright colony with them. It is safer to have the queen that is to be added on top where her bees can gnaw through the newspaper to get out, rather than the other way around. Doing it that way means that her loyal workers will destroy the laying workers in the colony below, and she will suffer no harm when the lower colony gets around to coming upstairs.

Some beekeepers requeen such a colony by putting a frame of brood with a queen in a new hive on the old stand, and then taking the old hive away for a distance of a hundred or so feet, and dumping the bees on the ground, off the combs. The theory is that only the real workers will return to join the new queen, and, since it is a strange hive, they are glad enough to have a place to stay without making trouble. My personal opinion is that the hive isn't worth saving, but you have to do something with it, so I guess that uniting is about the most sensible thing to do.

There doesn't seem to be very much known about this phenomenon. The condition is of little importance as a rule, and such research work as has been done has been done more from curiosity or purely scientific reasons. The symptoms generally are found in cases where the brood has been placed in a very ragged pattern, actually it is no pattern at all. Apparently the workers that do the laying just crawl into the nearest cell when they are in the mood and let fly. A good queen lays one egg in every cell that is ready for occupancy, but when laying workers are present you may find any number of eggs in a single cell, and then no eggs for a dozen cells. One case that I had some years ago showed up to a dozen eggs in some cells. And, believe it or not, I saw one cell in that particular case that was nearly half full of eggs apparently just dumped in. There must have been a couple of workers laying, and they were playing follow the leader. Since the bees doing the laying are workers, you cannot spot them as you do a real queen, and I do not recall ever having read of anyone who actually saw a worker bee laying an egg.

THIS SPRING I had that wonderful experience. Here's how it happened. One of my queens must have failed unexpectedly, because upon examination I found no worker brood and only about half a dozen drone cells. The bees seemed to have realized what happened after it was too late, because they had tried to draw queen cells over a couple of the drone cells. These cells had been destroyed by the bees tearing a hole in the side of each cell, when they realized that nothing good was going to come of it. There were enough bees in the colony to justify requeening, so I was going to give them a frame of brood from another colony to keep up their morale while I sent off for a new queen. But, just as I was going to put back the frames and cover until I found a colony that could spare a frame of brood, I saw something glisten in the bottom of a cell.

Now I have been fooled before by that spot of light in a highly polished cell, where the base of the opposite cell sometimes makes an angle that catches the light. So I took off my veil, put on my glasses and looked again. Sure enough it was an egg. Now I really looked. About three inches away was another egg. Here and there, all over the surface of that comb, with nothing resembling a pattern, an egg was placed just as a queen would lay it. And then I saw who did it.

When a baby bee cuts away the capping on her cradle cell, she is well

down into the cell with nothing but her feelers sticking out. When a mature bee crawls into a cell or when she wants to take a nap, she goes in head first. What I saw was a mature bee way down in a cell with her head up instead of down. It didn't click right away, but something didn't seem quite right about that. Other bees walking by didn't pay any attention, in fact, a couple of them stepped on her nose as they passed. As I watched, she gave a wiggle, and crawled out. Sure enough there was an egg in that cell. This bee then walked around as though she had just a wee bit too much to drink, and then started looking into cells, much as a queen does when she is ready to lay. Sure enough, she backed down into a cell, not with the majestic manner of a queen, but more like a fat lady squeezing into a bus seat that is too small for her. She took an awful long time about it. Maybe she said "ouch" a couple of times that I didn't hear, but when she finally crawled out there was an egg there, too.

By this time my arms were getting numb and I was looking cross-eyed. I glanced away to see where the hive cover was so that I could sit on it while resting the frame on the hive, and then looked back.

My laying worker was gone. She was still there, of course, but half a dozen other bees had come by to see what was going on, and you couldn't tell which was which. I don't think that I looked away for more than three seconds. But I didn't see any more. The performance was over for the day. Now I suppose that I will have to keep that colony until it is gone, just for the sake of seeing what happens, and how long it takes.

Bee Lore

Illustrated by V. R. Stephen

THIS FIVE-year-old Orthodox Jewish boy, in keeping with tradition, is about to kiss a drop of honey placed upon the first page he is to learn to read. Thus he is taught to associate learning with sweetness at a very impressionable age. Ages ago, his ancestors were also served honey cakes made in the letters of the alphabet.

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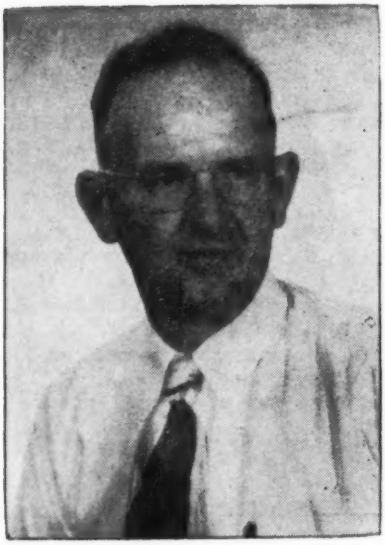
How many can you identify?

See page 444 for correct answers



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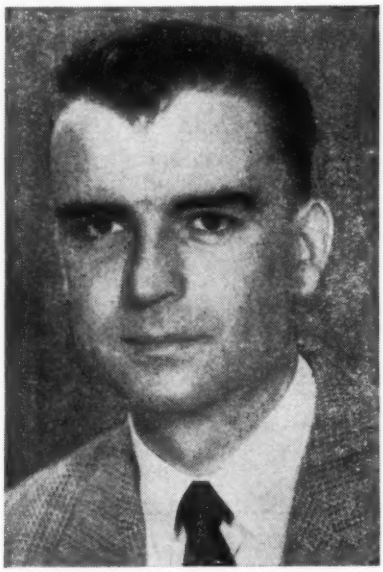

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Bee Facts

(A Digest of Scientific Research)

Edited by Walter Barth

Red Clover Study:

MR. R. M. MacVicar, E. Braun, D. R. Gibson, and C. A. Jamieson of the Canadian Department of Agriculture completed a cooperative project on red-clover seed production with particular reference to harmful insect control, pollination, and nectar secretion. The results of their research showed:

1. Seed yields of red clover were increased by as much as 25 per cent when meadows were sprayed with insecticides to control harmful insects.
2. The most effective control was a spray of DDT at the pre-bloom stage and a second spray of toxaphene at the full-bloom stage.
3. When grasshoppers were controlled with toxaphene, seed yields were increased approximately 18 percent.
4. Seed yield data revealed that pollinator effectiveness decreased at a point between 3/5 and 4/5 of a mile from the apiary.
5. Seed yield varied directly with pollinator activity.
6. Pollen grain counts from trapped samples indicated a dispersal of some pollen gatherers from the crop to be pollinated to competing crops. However, it is noteworthy that pollen-gathering activity in red clover was maintained at a high level.
7. Honeybees and bumblebees were present in a ratio of 12.5 to 1.5 when one colony of honeybees per acre was used.
8. Seed yields were not increased when honey was applied to the foliage as an attractant to pollinators.
9. The insecticides used did not appear to cause abnormal pollinator mortality.
10. The volume and concentration of nectar varied significantly between days, while during the day the volume was significantly higher in the afternoon. Blooms in screen cages gave significantly higher values for both volume and concentration of nectar than uncovered blooms. Insecticide-sprayed plots showed significantly higher nectar concentration than the unsprayed (check) plots but there were no significant difference in the volume of nectar between these plots.
11. The nectar volume in fertilized and unfertilized flowers diminished very rapidly after the fifth and seventh day, respectively. The third day after fertilization the per cent of total solids in the nectar decreased, but this was not apparent in unfertilized flowers until seven days after full-bloom. Wilting followed a similar trend.

MacVicker, R.M., E. Braun, D. R. Gibson, and C. A. Jamieson. Studies in Red Clover Seed Production. Scientific Agric. 32:67-80. Feb. 1952.

Clover Pollination

RESEARCH BY Dr. W. E. Dunham at the Ohio Agricultural Experiment Station plus supporting data from the U. S. Department of Agriculture shows that the day is past when agriculture can depend on pollination from native insects in the commercial production of legume seeds.

Adequate coverage actually requires a much heavier concentration of honeybees from commercial yards. For contrary to general public opinion, honeybees rather than bumble bees are furnishing the bulk of pollination on Ohio's red clover fields.

Dunham, W. E. Pollination of Clover Fields. Ohio Farm and Home Research. Vol. 39, No. 289. July-Aug. 1954.

XUM

Let's talk about honey plants

HARVEY B. LOVELL, University of Louisville, Ky.

Mustard honey. This spring in northern Ohio there has been an unusual flow of honey from the mustards particularly the yellow rocket (**Barbarea vulgaris**). Although mustard honey is regularly obtained in surplus form in parts of Saskatchewan, it is rarely mentioned except for spring build-up in the eastern part of the United States.

Walter Barth writes me that "This plant is becoming more and more abundant in New York and now in northern Ohio, and is rapidly developing into an important spring source of nectar. Many people confuse it with the wild or black mustard (**Brassica nigra**) which is also prevalent in New York and Ohio."

The sample sent me is a rich yellow color, one of the yellowest honeys I have ever seen. It has a full-bodied pleasant flavor, one that could easily become popular with the consumer. I liked the flavor so much that I immediately ordered 10 pounds for home use and demonstration purposes.

Sourwood. Joseph Harris writes from Morgantown, West Virginia, that he is very much interested in sourwood as a honey plant, because of the very delightful flavor of the honey. He is trying to develop a superior variety of sourwood by experimental methods. In his locality it blooms from July 1 to August 1, but the main flow is from July 5 to July 20. It yields up to three supers of sections in a good year with the average about one and one-half supers.

Sourwood should be planted more extensively around apiaries especially in the southern Allegheny region. It makes an attractive ornamental plant when in bloom with the long racemes of white, bell-shaped flowers. In the fall the leaves turn a brilliant crimson giving it a most striking appearance. The long cluster of seed capsules remain on all winter which makes it easy to recognize sourwood then. A beekeeper can easily locate the best stands in his vicinity and plan to move his bees to the area the following summer.

Another advantage of sourwood is that it blooms in July after the clovers have passed their prime and beekeepers in the lowlands near the mountains can extend their season by moving into the hills as sourwood comes into bloom.

Matrimony vine. From Odell F. Burch of Virginia comes the information that his bees work **Lycium halimifolium** heavily. "Here it is a honey and pollen source for the bees in the extreme late fall, outranking such fall plants as the asters and goldenrods for lateness of production. The bees are crazy over it, more so than on Hercules club (**Aralia spinosa**), and all insects

Sourwood (Oxydendrum arboreum.) "Best honey in North America".

go for that." Mr. Burch adds that he gets the scientific names of his honey plants by sending them to the Academy of Natural Sciences at Philadelphia.

I had several of the shrubby, prickly, matrimony vines growing in my yard, in fact they spread so rapidly they became somewhat of a pest. My bees worked them, but not as eagerly as they did for Mr. Burch in Virginia. Although called a vine, Lycium is more a slender shrub with long branches which bend down and take root.. It has small blue flowers and bright red berries.

China-berry. Mr. Busch also enclosed a pressed specimen of this interesting tree in full bloom. He writes, "I just noticed yesterday (May 28) the bees are getting honey and working hard on a tree common here and farther south as a shade tree." I saw China-berry in bloom at Baton Rouge, on April 8, where Dr. E. Oertel remarked that honeybees worked it freely in Louisiana. The trees have clusters of orange berries which remain on all winter. Almost every cabin in the southeastern states has one or more of these trees and collectively they must be quite a help to beekeeping.

Japanese bamboo. Edward Fuhlbrugge of Newark College, Newark, New Jersey, writes, "I have read with much interest your informative articles on honey plants. In the October 1954 issue of Gleanings you mention Japanese bamboo. This last August I noticed isolated beds of tall plants growing very close together which bees were working heavily. The flowers were white and the stems were like bamboo in some ways."

This certainly sounds like Japanese bamboo or knotweed. It is a member of the buckwheat family and yields honey freely but I have not as yet been able to find out anything about the color or flavor of the honey. Two species have been introduced into this country. The more southern variety grows to a height of 10 to 12 feet. They grow very rapidly and often become a nuisance.

Coral vine is a spectacular plant climbing over fences and porches in many southern states, particularly Georgia and Florida. I have never seen bees swarm over any plant more eagerly than on coral vine.

It would appear to be an excellent species to plant for honey. The chief drawback, however, is the color of the honey. Most books on honey plants state that the honey is white, but every beekeeper with whom I talked in the area were in complete agreement that the honey is very dark approaching black. Most red flowers produce dark honey in my experience. A. V. Dowling of Valdosta told me that he keeps his bees as far as possible from towns where this vine is grown as it ruins the color of his gallberry honey.

Attractive Honey Stand

Glen Yutter and daughter of Adrian, Michigan. A major part of his honey crop is sold from this attractive road side stand.

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FROM Foreign LANDS

Translated and Edited by Erika Barth

Garlic Paste for Bees! What about Their Breath?

AN ITALIAN patent for a new bee food contains garlic paste. Here is the recipe: 60 parts of sugar is dissolved in 14 parts of water at 90-100 degrees C. (194-212 degrees F.). Four parts of dry yeast, 21.5 parts of soybean meal, and 0.5 parts of **garlic paste** are mixed, and the sugar solution is poured over the mixture and worked in with continuous stirring. The product is thus denatured in order to prevent its use for human consumption.

Feeding Stuff for Bees. Societa Italiana Berlese Societa per azioni. Italian patent 471, 145 of May 6, 1952.

What Attracts Bees to Manure Piles?

IN THE springtime honeybees are often seen working on manure piles. The cause of this strange behavior has always been contributed to the bees' need of acquiring salt. Lueftenegger, a European beekeeping specialist reported in his book "Grundlagen" that bees are attracted to manure piles by a substance unknown to us. According to a report by R. Miellet these excellent chemists (honeybees) find the well-known vitamin B2 in the manure pile. To the bees also goes the credit of knowing the strengthening effects of pollen long before it was known to man.

Revue Franc. d' Apiculture. Jan. 1955.

Action of Bumblebees During an Eclipse:

OBSERVATIONS of bumblebees during a total eclipse of the sun that took place June 30th, 1954 by Dr. Astrid Loeken of Bergen, Norway, showed without a doubt the importance of light in regard to the activity of bumblebees. Total eclipse occurred at 1:32 p.m., Middle European Time. At approximately 12:35 p.m. a noticeable decline of working bumblebees were observed. The change took place in conformity with the declining flight. While at 12:35 p.m. 120 bumblebees were flying, none were seen a few minutes later. Not before 1:43 p.m. did the first bumblebees appear again. More and more appeared as the light increased. The count at 2.05 p.m. was 108.

As far as the workers were concerned it appears that the bumblebees spent the pause in assembling in their nests, at least the time circumstances point to it. Mention was made that the change in flight during the total eclipse was not caused by change of temperature or humidity since the fluctuation was too slight.

University of Bergen. Arbok 1954. Naturvitenskapelig rekke Nr. 13.

Caution: Do Not Shake Brood Frames

IT IS a well-known fact, that a large part of the eggs have their connections to the bottom of the cell severed and are thrown to the sidewalls when a brood frame is shaken. This practice will dislocate a possible half of the eggs in the frame. Larvae do not seem to be so delicate. Most of the displaced eggs are removed by the bees, and of the remaining ones, only a few mature. It seems that only the bottom of the cell offers enough food for development of the larvae. Bees have never been observed to replace a displaced egg back to the bottom of the cell, or to any other location. They are apparently following their instinct to remove all loose-lying bodies from the cell. If possible, do not shake, but brush off brood frames!

Der Oesterreichische Imker, August 1954.

Asked & Answered

Bees Fail to Work in Super

Question: Why should a large colony try to store all of its honey in the brood chamber? I put on supers early, but the bees refused to work in them and have jammed the brood chamber full of honey so there is not enough room to rear brood. —Kentucky.

Answer: There are several conditions under which colonies persist in storing honey in the brood chamber instead of in the supers. The usual reason for this is the lack of sufficient numbers of bees, this trouble being common in weak or medium colonies. Another reason for bees behaving in this manner is the character of the honey flow. During a slow or an intermittent honey flow they are inclined to store honey in the brood chamber instead of in the supers. If there is considerable sealed honey in the upper portion of the brood combs, this sometimes acts as a barrier between the brood chamber and the super. There is also a difference in the behavior of different strains of bees in this respect. Some strains are more inclined to crowd the queen by storing too much honey in the brood chamber. This trouble can usually be overcome by giving a super of empty combs if extracted honey is to be produced. When strong colonies behave in this way in comb honey production it is sometimes advisable to make an artificial swarm by shaking the bees into a new hive on frames of foundation so that they are compelled to put the honey into the supers.

Bees Quit Working in Supers

Question: Last season when the bees had their sections almost ready to cap they suddenly began to hang out as though they were going to swarm, but they did not swarm, neither did they finish the sections. What was the trouble?—Indiana.

Answer: When the sections are full the bees must then wait until the honey is ripened before sealing it. If you did not give them more super room this would explain why the bees quit work and began to cluster on the outside of the hive. To wait for the bees to seal the honey before giving another super would sometimes result in the loss of several supers of honey that might have been secured if more supers had been given at the proper time. Of course, it may be that the honey flow ceased at the time you noticed that the bees quit work, which would cause them to cluster on the outside of the hive. After the honey flow it is perfectly normal for the bees to cluster out in this manner.

Uses of Queen Excluder

Question: What are the main uses of queen excluders and how are they used for each purpose?—Mississippi.

Answer: The term "queen excluder" usually applies to the appliance used between hive bodies to prevent the queen from passing from one to the other, although in a broader sense the queen excluding metal used in queen and drone traps and entrance guards are, in fact, queen excluders in that they are designed to exclude the queen. When a queen excluder is used between hive bodies it is usually placed between the brood chamber and the super to keep the queen from the super. It is used chiefly in extracted honey production for this purpose, not being necessary in comb honey production except in special cases, such as on recently hived swarms when the brood chamber contains frames of foundation only.

When and How Often to Requeen

Question: When is the best time to requeen any colonies and how often should I requeen them?—North Carolina.

Answer: In many locations, the best time to requeen is near the close of the early honey flow. If this is done before the honey flow ceases it is much easier to work with the bees than when nectar becomes scarce; and a young queen that begins to lay in July or August will lay more eggs in September than an old queen, thus making a better colony for winter on account of the abundance of young bees. In localities where the fall honey flow begins early in August, this would be a good time to requeen; but the young queen should begin to lay not less than six or eight weeks before brood rearing ceases in the fall, for this much time is needed to furnish sufficient young bees for winter.

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From the Field of Experience

Finding the Source of a Swarm

R. E. LYON, Collins, N. Y.

His first swarm—Photo by Frank Buckley.

A FEW DAYS ago I went up to my apiary of 20 colonies to see how they were coming, and found a swarm hanging on a dead limb of a fallen tree about three feet from the ground, in among some large wild rose bushes. I couldn't get my empty hive in near them and the dead limb they were on looked too large to cut off.

I broke off a little branch in the edge of the cluster with about a pint of bees on it, which I placed at the entrance of the hive and they began moving in. Then I managed to break off a larger piece of the limb on which they were clustered, as it was more rotten than I thought. A big share of the bees fell off but I placed it near the hive entrance and the bees began pouring in fast and finally, all went in or clustered on the outside.

I was quite anxious to know which colony had cast this swarm, as I realized that they would cast more afterswarms if nothing was done to prevent. I looked at the entrances of each colony but couldn't find any clue as to which it was.

I left the new swarm where I hived them until the next morning. After retiring that night I remembered reading about putting flour on bees to see which hive they went into. The next morning I placed an empty hive body by the side of the new swarm and lifted the drawn combs over into the empty hive body and then sprinkled the bees that were left in the now empty body with flour from a sifter. Then I carried the body with the combs in, away to a new stand.

I walked along the row of hives, watching at the entrances, and sure enough, I found bees with flour on going into No. 19, next to the end of the row. On looking into No. 19, I found plenty of queen cells. As I did not want any more increase, I joined up the new swarm with a weaker colony (newspaper between).

Chasing Swarms

THOMAS DOONAN, Des Moines, Iowa

IF YOU live in a metropolitan area as I do, perhaps you might be interested in some of my experiences in catching swarms of bees during the summer of 1954.

As a backyard beekeeper of about two years' experience I had accumulated several empty hives, but I couldn't afford to buy package bees for all of them. Therefore, in early spring I gave my name and telephone number to our city police dispatcher, and then held myself in readiness for the day when the bees would begin to swarm.

On May 21st the calls began coming, and there was never a dull moment thereafter until the last of five swarms had been hived — that last one on June 14th. I must admit that because of tactical errors or insurmountable difficulties, I came home empty handed the first three times. Then at long last, the fourth swarm, which was no more trouble to hive than taking candy away from a baby, and after that, I never missed a swarm.

The bees were found in all possible locations—from a lilac bush,—the high gable of a house,—to underneath the glove compartment of a car. The swarm in the car episode brought a photographer and reporter from the Des Moines Register & Tribune. I was interviewed and the morning paper next day carried the story along with a picture of the swarm and the owner of the car standing back of the open car door, and actually that was closer than he cared to be.

As a result of my various experiences, I am prepared to make certain recommendations which I feel quite sure would be helpful to anyone who might like to try his luck in building up his apiary faster, and at a minimum of cost, as I did.

For instance, the following list of materials is essential: An empty hive,

Swarm clusters in a car.—Photo by Des Moines Register & Tribune.

—Photo by Des Moines Register & Tribune.

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securely stapled together with hive staples, and the hive body filled with brood frames of foundation. Incidentally, the new type frames which can be put together in a matter of minutes with a minimum of nailing, and the ready wired and reinforced brood foundation which doesn't have to be supported by wires in the frames, can be real life savers when you get a hurry-up call.

Take along a bee veil, gloves, and smoker, if you want to play safe—personally, I do. A bushel basket (the wooden shipping fruit baskets are ideal), a saw, and tree pruners. A ladder is of course very often required—the exact height can be ascertained by telephone, or by personal investigation. The swarm may be safely brought home in the back seat of the car, if a hammer and nails and a small block of wood or piece of screen wire to close the front hive entrance, is taken along.

If you don't have frames of honey to feed the new swarms (and I did not), it will be necessary to feed them sugar syrup for a few weeks, or until they have built comb in several frames. After that, if conditions are normal, the new colony will be in business for itself, and will require only routine inspection thereafter.

This hint I consider **most** important. After having had a discouraging skirmish with AFB two years ago, which wiped out all my initial colonies, I always add a scant level half teaspoonful of powdered sulfathiazole to each gallon of sugar syrup I feed. What is significant to me, is the fact that since I began using the preventive sulfa treatment there hasn't been the slightest trace of AFB in my apiary, and I might add that every colony was checked twice a month from the start to the finish of the season.

ON JUNE 15th, I called a halt to chasing swarms, for my empty equipment was all occupied. However, dozens more calls regarding other swarms came my way, and I could have had 25 swarms for free as easily as the five.

As I look back now, the swarm hived on June 5th was the last one which made enough honey to winter themselves. The last two swarms, hived respectively on June 13th and June 14th had to be combined in late summer when it became obvious that unless their resources were made common both colonies would starve in the coming winter. So that was proof enough for me of the absolute truth of the old saying that "a swarm in July isn't worth a fly".

None of these May or June caught swarms made any surplus for me, but in view of several considerations, I was well satisfied with their average production of about 75 pounds per colony. They had to build comb from foundation, every frame of it, and I winter them in double brood chambers. Also, Iowa in July of 1954 (like many another state in the midwest) was very dry and hot, which made August and September not nearly as productive as they might have been, had rain come sooner.

Swarms Not Equal to Package Bees

In closing, let me say that in no sense do I consider swarms caught by "chasing" the equivalent of those started from package bees and queens, for the simple reason that colonies don't start swarming in April in this part of the country. I had two three-pound packages with hybrid queens arrive on April 12th, and the best of these two colonies produced 200 pounds of honey, or a surplus of 100 pounds. The bees had to draw out comb from foundation in every frame in those four deep supers. There is no way in the world for a swarm hived 30 to 60 days after the middle of April to catch up with the early swarm, provided they are all started on equal terms.

At any rate, if you scarcely know where your next swarm of bees is coming from, why not let the police dispatcher in your city tell you. I can almost guarantee that you will have adventure, and fun, and it can be profitable for you, too. If there is a helper in your home who would be equally interested in the project, as my wife is, so much the better. Then you will hardly ever miss a call and often comes the word, "Hurry home from work, dear, the police say there's a large swarm at ....".

Stingless Bees — Distribution and Habits

W. P. STEPHEN, Oregon State College

THE STINGLESS bees are a rather remarkable group of the social **Hymenoptera** that are distributed in and about the tropical regions of the new and the old world. There is no doubt that the genera which make up this group are close relatives of the common honeybee, but just how close, is a matter of conjecture.

Schwartz, the authority on this group lists them as a separate family, the **Meliponidae,** while Michener in his work on the classification of the bees of the world considers them to be a tribe **Meliponini,** a close relative of the tribe **Apini.** That the two groups are close relatives is beyond question and the comments on their systematic rank is of little bearing on this note.

Stingless Bees Lack Defense

The stingless bees are peculiar from the honeybees in that they lack any of the usual methods of defense. The external reproductive organs are not modified for stinging purposes as they are in workers of other social forms, but are rather soft and pliable. Two genera are generally acknowledged in the stingless bees; **Melipona,** which is restricted to the tropical portions of the new world and **Trigona,** which is found in the tropics of both the new and the old world. In spite of the lack of the sting for defense, these bees have other effective defensive mechanisms.

The nesting sites of the stingless bees show extreme diversity. For the most part both genera appear to prefer to nest in hollows of trees and logs, however, nests have been found in almost every conceivable cavity. There is apparently no hard and fast specificity on the part of the bees for individual colonies of the same species are found in a wide variety of sites. Nests have been taken from three and one-half meters below the surface of the ground to high in trees. They are mostly enclosed, but on occasion, nests can be found in dense foliage, wedged between limbs of trees, in excavations in rocks, or in termite and ant nests.

The majority of nests are located in hollows in trees and this appears to be preferred where available. Nests in these locations are shut off above and below by a bee constructed plate, except where the cavity is of a size so as to support only a single nest. Many of the sites are easily located because of the rather conspicuous tube leading outward from the entrances. These tubes may take on a variety of shapes and are composed of a number of materials including mud, organic matter, and wax.

The passageway leads to the interior of the nest, usually to its center, where the brood chamber is located. For the most part, the interior of the nest differs rather markedly from the honeybee. Usually the nest consists of horizontal layers of comb with cells located only on the upper side. Each layer of cells is supported by waxen pillars which give the nest its support and rigidity. The brood chamber is invariably centrally located and the nectar and pollen pots are above, below, or lateral from the brood. Various modifications of this pattern are found; some have the comb constructed in a spiral pattern while others have the cluster type cell arrangement in which the cells are irregularly grouped and separated by thin sheets of wax.

AGAIN DIFFERING from the honeybee, the honey and pollen are not stored in the comb but in honey pots or jars. These receptacles vary in size depending to some extent upon the size of the bee. Honey pots from the larger bees of the genus **Melipona** may reach the size of a small hen's egg and these pots are frequently stored in groups and can be removed en masse.

Populations of bees within each nest may exhibit a greater variation than honeybees. Estimates made on the occupants of **Trigona** nests range from a few dozen to 80,000. **Melipona,** however, does not show these striking variations and the nest populations range from a few hundred to several thousand.

Many of the activities of the stingless bees are similar to those of the honeybee and beekeepers in this country would probably have little difficulty in managing a wild bee yard in the trop-

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ics. The stingless bees swarm primarily during two seasons of the year, they are dependent upon their queen for brood production, discard their males in the fall of each season, ventilate their hive by fanning of their wings and protect the entrance with guard bees.

Domestication, particularly of some species of **Melipona** and to a lesser extent in **Trigona,** is an age old custom in the new world tropics. One species of **Melipona** in particular lends itself to domestication and apiaries are a common sight. Hives for these bees usually consist of hollow logs cut into three-foot lengths. The ends of the log are sealed with mud or with a piece of wood secondarily caulked with mud, and a hole is bored into the center of the log. The logs are then suspended from a tree for chance occupancy by a newly emerged swarm. The more progressive apiarists often transfer a portion of the brood, including some of the royal caste, into the new hive and early honey production is realized.

Many of the new world apiaries have the bee logs piled about under a shelter for protection which also facilitates honey collection. At the appropriate time, usually once each year, but often more than this, the beekeeper takes his toll. He removes the ends of the hive and takes out the laterally located honey pots, replacing the ends upon completion of the chore. The yield is not great, but sufficient to satisfy the needs for a zestful brew and sweetening. The primitive natives of the old and new world relish honey and go to great pains to track down these productive stores.

Royal Jelly Needed for Experimental Work

CHARLES MRAZ, Middlebury, Vt.

ANOTHER summer with its swarming season is here. With many beekeepers in the North in swarm control operations, many pounds of royal jelly will be thrown away. Since there is considerable evidence royal jelly does have growth stimulating properties worthy of further study, perhaps some beekeepers are willing to save some royal jelly for experimental work. I have several doctor friends who would like very much to so some of this experimental work and are looking for a supply of jelly. Since this work is all still experimental, it will have to be done gratis and the jelly supplied in the same way. Any beekeeper interested can send me what they can collect in small tightly-covered jars and I shall give it to these interested doctors as they need it. The jelly from unsealed cells is best and should be kept clean of larvae and wax and kept cool. It should not be frozen unless kept for long periods of time. When shipping by mail, royal jelly needs no special packing except against breakage.

Federation Honey Display Picture Contest

IN ORDER to stimulate interest in the Federation's Honey Promotion and to publicize proper displays which sell honey, the Federation with the cooperation of Gleanings in Bee Culture and the American Bee Journal, is conducting a Honey Display Picture Contest.

All beekeepers, members of their families, and hobbyist beekeepers are invited to enter. Prizes will consist of suitable beekeepers' supplies. Winners will be published in the above mentioned journals (October Issue). Complete rules and detailed information will be given in the August Issues. Send all entries to Robert Banker, Sec.-Treas. American Beekeeping Federation, Inc., Cannon Falls, Minnesota (no entries returned). Contest closes on September 1, 1955.

American Honey Institute News Notes

HARRIETT M. GRACE, Director

THERE IS a clever little child's finger game about bees and beehives that starts with the child doubling up his hand into a fist and goes like this:

Here is the beehive,
Where are the bees?
Hiding away where nobody sees!
They are all coming out now,
They are all alive!
One, two, three four, five!

And one by one the bees (or fingers, whichever you wish, depending on your imagination) pop out of the beehive (or fist).

Just as, one by one, these check points on honey marketing should pop out of your head as you look both ways in your mid-season marketing efforts to see if honey is keeping pace with your pre-season hopes:

1. **Advertising.** Have you? Are you? Will you? You better!

Pick up a Thursday edition of the local paper and look at the food ads—any mention of honey? If not, how about running a honey "special" for the week and advertising the fact?

It is not too late now to start a small advertising system of your own, whereby your ads will appear in the same part of the paper in the same format at regular times. This type of consistent advertising is what pays; don't sink all your funds into one large splurge of an ad and then stop. Rather, insert smaller, weekly ads that plug away at the same simple theme: Honey is a pure, natural reasonably-priced sweet. Include your name and address, and if there is still room, a simple honey hint.

This has been proved to be the most effective advertising, the kind that really "pays".

2. **Displays.** You've been in this marketing business long enough to rate your own honey display against those that compete with it. Be honest now. How does your honey stack up?

Is the display big enough? Clean? Colorful? Does it have a point to make, or a theme? How about the American Honey Institute posters—are they there? Can you tie in your honey display with another food product, such as a biscuit mix, and display the two of them together?

Use your imagination on these displays but keep them simple. A cluttered up display only confuses the homemaker.

3. **Honey recipe leaflets.** It's not as if you as a beekeeper had to endure the huge expense of printing honey leaflets for your own use. You don't. You need only to buy them at cost from the American Honey Institute.

So poof! go your excuses for not using honey recipe leaflets. Every beekeeper can afford to buy them, not one beekeeper can afford not to use them.

A homemaker with a recipe is worth 10 without one, from the standpoint of the honey merchant. If she can cook with honey, she will use more honey than if she only puts a dab on a slice of bread every so often.

Institute recipes are simple, are retested to guarantee good results, and are universally appealing. If Mrs. Homemaker once tries a honey recipe, she will make honey cooking a habit.

And that's what **you** want.

4. **Extra promotions.** Is your booth for the county or state fair ready? Have you entered any cooking contests with a honey recipe lately? Are you trying tie-in promotions of honey with other foods? Is your honey ever the "feature of the week" at the grocery store where it is sold?

A good promoter often is the person who is willing to give a little thought to the subject. Every community has its own local events that lend themselves to a good honey plug. Make sure your honey takes its place in community affairs.

5. **Your own feelings about honey.** Do you hold honey in high esteem and use it as much as you want others to use it? Come now, let's be honest. Honey on the breakfast table, at lunch, and for supper. Honey in your own cakes and cookies. Honey in your stomach as well as on your selling counter.

Your own enthusiasm for honey will rub off on a prospective customer. If you believe in it, so will she.

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A Talk to Beekeepers

M. J. Deyell

Excessive Swarming

IT WOULD be interesting to know how many swarms have issued from hives in the United States thus far this season. On May 15 we attended a bee meeting in Cleveland. One beekeeper who devotes some time to picking up stray swarms here and there in the city said he had captured 18 within a week or ten days.

The nature of the season in this section of Ohio was very favorable for swarming. Most of the honey plants secreted nectar this spring and there was a continuous honey flow, when the weather permitted, during late April, May, and early June.

Much of the swarming was due to beekeepers not g i v i n g a sufficient amount of comb space or putting on supers in time to relieve congestion within the hives.

Within the week one of my helpers and I checked through a yard of 40 colonies. As we were leaving, my helper glanced over the valley adjoining the yard and saw a large swarm which covered the side of a small tree. As we were hiving this swarm I saw another one nearby on a tree similar in size. Both swarms were hived. We put a frame of brood into the middle of each hive containing drawn combs. The brood helped attract the bees into the hives.

As we were leaving the yard, I glanced up into an apple tree and there was another swarm which we hived. We were rather surprised to have so much swarming in that apiary as most of the colonies were either three or four stories high and we used very few queen excluders. The queens had the run of all of the combs in the hives. We had very little swarming in other apiaries. We aim to put the queens down into double brood chambers below excluders, after the main flow starts.

Once a Beekeeper, Always a Beekeeper

Just recently I received a letter from Charles H. Turner, Dover, Vermont, who has kept bees continuously for over 60 years. He is 93 years old, or perhaps we should say young. Unfortunately, he lost his bees last winter but he says he is not quite ready to give up beekeeping and intends to get more bees. If some of the younger beekeepers were as anxious to continue beekeeping as is Mr. Turner, our industry would be better off.

Harry Tall of Ithaca, N. Y., uncapping a comb before it is put into a honey extractor. This beekeeper cuts from the bottom to top of comb. Some cut from top to bottom.—Photo by Les Rick.

Most beekeepers who have kept bees for many years would be lost without them. I don't know what I would do if I did not have some bees to occupy my spare time during the summer.

No Two Colonies Exactly Alike

How different beekeeping is from some other lines of work. For example, a man in a manufacturing plant on an assembly line does the same thing, in the same way day after day.

In the bee yard, things are different. When checking through colonies in an apiary, we find each colony different from the others. Theoretically, it should be possible to have all colonies in an apiary of approximately the same strength. However, queens vary in quality, even sister queens or queens from the same mother. Some queens are very prolific while others lack vigor. The big problem in apiary management is to have colonies as nearly alike in strength as possible at the beginning of the major honey flow.

Two-queen Colonies

OCCASIONALLY, we find a colony with two queens, both laying prolifically. Possibly we have more two-queen colonies than we suppose. It is usually a case of mother and daughter. (The late George S. Demuth, former editor of Gleanings, said that he had a colony with three queens, daughter, mother, and grandmother.) The old queen is usually tolerated as long as she continues to lay. Such two-queen colonies are usually very populous. It is difficult to know from a casual observation whether a colony has more than one queen. When the operator finds one queen he assumes that she is the only one in the colony. One could know for a certainty how many queens are in a colony by running the bees through a queen excluder but that takes considerable time.

Some colonies have made unusual records in honey production. If the truth were known, those colonies may have had two queens for a time at least, during the building-up period in the spring and early summer.

Can any one tell me what eventually happens to the old queen when she is on her last legs? I assume she dies a natural death and is carried out of the hive and dropped on the ground some distance from the hive, as is the case with worker bees. It would seem as though she should be entitled to some special burial ceremony.

Beekeeping in the Far North

When I made a trip into northern Alberta and British Columbia in 1953, I had a chance to make some observations regarding the behavior of bees in that part of the country. Colonies build up very rapidly during April and May. The main honey flow starts in early July and lasts about a month, there being 16 or 18 hours of sunshine during the longest days. The bees are so busy gathering nectar that they do not have time to swarm after the honey flow gets under way. This intensive season results in large crops of honey. Queens are worked very hard and the death rate in colonies must be very high. Most of the colonies in that area are started from packages installed in April. A few beekeepers winter bees out of doors or in bee cellars.

Taking off Honey

During July in the North some summer honey is removed from hives. The beginner is usually anxious to taste some honey that his bees have produced.

Beginners as well as experienced beekeepers should be warned not to remove honey from hives until it is properly cured or ripened by the bees. Honey with a high moisture content is likely to ferment. During a wet season it is difficult for the bees to drive off excess moisture from nectar. Most nectars when carried into the hive are approximately 66 per cent water. The bees drive off this excess moisture by fanning their wings and expelling the moisture-ladened air from the hives.

During a dry season, moisture is expelled from the hive quite easily and the honey is ripened quickly. A good rule to follow is to leave the combs in the supers until they are three-fourths capped over. It may not be possible to have all combs capped over because bees usually leave a few uncapped cells, presumably as food for the bees in the event of a dearth of nectar.

Beginners producing section comb honey may remove a few sections from the middle of the supers in order to have some honey for table use. The remainder of the honey should be left on until the bees have finished capping it.

One method of removing supers of honey is by means of a bee escape. This small device fits into the opening at the center of the inner cover. The bees enter a small opening in the top of the escape and go down between

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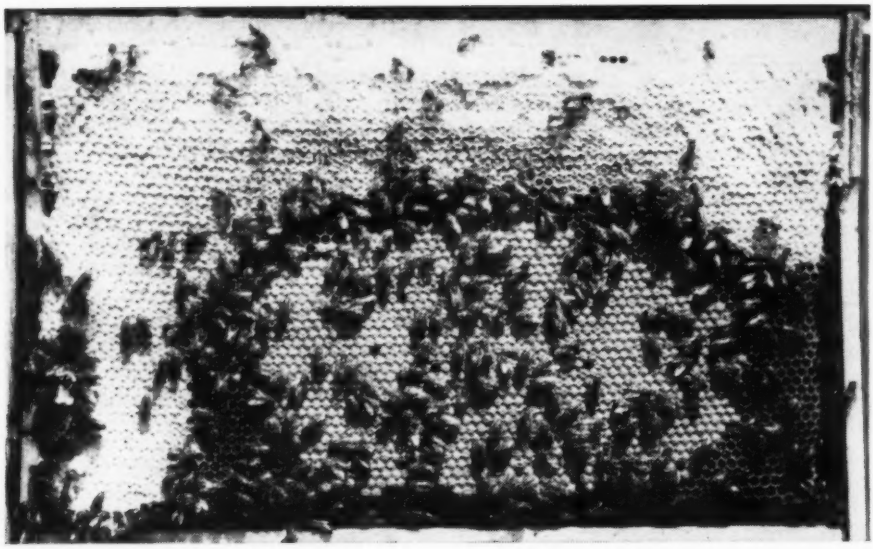

A comb containing capped honey above and sealed brood below. —Photo by David Bone, England.

two pliable springs into the brood chamber below. They are unable to return through the escape. If the bee escape is put under one or more supers in the afternoon, the bees should be out of the supers the following afternoon. The supers can then be carried into the honey house without disturbing the bees.

Extracting Outfits

BACKLOT beekeepers do not need a large outfit. In fact, it is possible to handle honey from 25 to 50 hives with a two or three frame honey extractor. Be sure that the machine is properly anchored. Where electricity is available, a small 1/6 h.p. motor may be used to advantage. Do the extracting in a basement or a building that is bee-proof. The honey should be extracted during hot weather, if possible, as it can easily be thrown out of the combs when the temperature is high.

The extractor should be fastened to the floor to prevent rocking while in motion. Combs of approximately the same weight should be selected so the machine will not be thrown out of balance. After combs are uncapped with a hot knife, they are placed in the basket of the extractor and part of the honey should be thrown out of one side of the combs, which requires only a few revolutions, then the combs are reversed and all honey is thrown out of the opposite side. The combs should then be reversed again and all of the honey thrown out of the first side. This avoids placing too much strain on the mid-ribs of the combs and results in a minimum of comb breakage.

During hot weather, honey direct from the extractor will strain quite readily through two thicknesses of fine cheesecloth. If the weather is cool, it may be necessary to heat the honey before straining. Do not overheat as this tends to destroy the delicate flavor.

It is very necessary at the close of the honey flow to avoid having bees rob. Hives should not be left open any longer than necessary and combs of honey in supers should be well covered or stored in buildings, safe from the bees. Extracting houses should be well screened.

Getting the Food Chamber Filled for Winter

This may seem rather early in the season to talk about the food chamber but in reality July is the month to consider this problem. This applies mainly to beekeepers where the clover flow

(Continued on page 439)

Beekeeping Short Course—Pa. State University, August 22 to 27

A demonstration on management problems at one of the Short Courses. —Photo by R. S. Beese.

Monday A.M. Registration.
Monday P.M.
1:30 A Word of Welcome, Dr. Bertil G. Anderson
1:40 Announcements
1:45 Introduction to beekeeping terms
2:00 Secrets of the Hive — Edwin J. Anderson
2:45 Making a Start in Beekeeping — W. W. Clarke
3.00 Inspection of the laboratory and equipment
4:00 Demonstration on assembling equip.
Tuesday A.M.
8:30 Colony Activities and Characteristics — George Rea
9:15 Care and Introduction of Package Bees — Edwin J. Anderson
10:00 Spring Management — W. W. Clarke
11:00 Swarm Control — E. J. Anderson
11:30 Question Period
Tuesday P.M.
1:30 Work in the Apiaries to Observe
a. check colonies for swarm control
b. honey production
c. demonstrate swarm control practices
d. remove honey from colonies with bee-escapes and carbolic cloths
7:30 Honey Producing Area — Edwin J. Anderson
Honey Plants of Pennsylvania — W. W. Clarke
Movies — Story of the Bee
Wednesday A.M.
8:30 Summer Management—W. W. Clarke
9:15 Fall and Winter Management — George Rea
10:00 Queen Rearing — E. J. Anderson
10:45 Requeening — W. W. Clarke
11:30 Question period
Wednesday P.M.
1:30 Demonstration
1. Shaking package bees
2. Introducing queens
3. Transferring bees from a box to a modern hive
Wednesday Evening
7:30 Early History of Beekeeping — George Rea
Composition Properties of Honey
Edwin J. Anderson
Sampling Kinds of Honey — W. W. Clarke
Thursday A. M.
8:30 Comb Honey Production — Edwin J. Anderson
9:15 Pollination of Farm Crops — W. W. Clarke
10:00 Management of Bees for Extracted Honey Production — George Rea
10:45 Extracted Honey and Its Care Edwin J. Anderson
11:30 Races of Bees — W. W. Clarke
11:45 Question Period
1:30 Examining colonies in apiary used for queen rearing and mating queens
Grafting in the apiary
Removing Honey
Making queen equipment
Friday A. M.
8:30 Control of Skunk, Mice, Ants and Wax Moth, etc. — George Rea
9:00 Diseases of Honeybees — W. Clarke
10:00 Marketing Honey — E. J. Anderson
10:45 Care of Beeswax — W. W. Clarke
11:15 Question Period
Friday P. M.
1:30 Extracting and bottling honey in the honey house, with three sets of equipment
Grading comb honey
Wrapping cut comb honey
Bottling chunk honey
Working beeswax
6:00 p.m. Banquet, Autoport on Route 322 on southern edge of State College. Speaker, Movies

The number which may attend is not limited. The cost is $7.50 for residents of Pennsylvania and $12.50 for those out of state. To register, write D. R. McClay, 203 Dairy Bldg., State College, Pa.

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Just News

New Jersey Short Course.—A beginners' short course in beekeeping will be held July 11, 12, and 13, and complete details can be obtained from Milton Stricker at Annandale, N. J. An advanced short course will be offered on July 14 and 15 at the Log Cabin of the Experiment Station, New Brunswick, N. J. Registration fee is $6.00 for non-members and $5.00 for members of the New Jersey Beekeepers Association.

The **South Dakota Beekeepers' Association** will hold its annual meeting on Monday, July 18 at South Dakota State College, Brookings. Complete details are obtainable from Warren Miller, Director, Plant Industry Bureau.

The annual **Michigan State Beekeepers' Association** meeting will be held Friday, July 15, at the Ionia Free Fair Grounds, starting at 10 a.m. The program will cater to beginners and veteran beekeepers. A 1955 Honey Queen and honorary life members will be chosen. A pot luck lunch and supper will be held on the grounds. Coffee and ice cream will be served by the association.

The **Eighth Annual Beekeeping Short Course,** Virginia Polytechnic Institute, Blacksburg, Virginia, will be held August 1, 2, 3, and 4, at the same time as the Garden Lovers' Short Course. Registrants may attend sessions of either group that they desire. An opportunity will be available for a picnic on the beautiful Blue Ridge Parkway on Wednesday. This is an excellent opportunity for additional knowledge and a rest from daily routines.

Prof. E. J. Anderson, Pennsylvania State University, will be the guest speaker on apiculture. Paul Cutts, Chipley, Florida, will speak on queen rearing. A combined meeting will be held with the Garden Lovers to hear W. G. Lord, Naturalist, Blue Ridge Parkway, speak on Native Plants.

Space has been secured for rooms in the dormitories at $1.00 per night and meals will be served in the dining hall at 60c each. Registration fee, $2.00. Write J. M. Amos, Blacksburg, Virginia, for details. Anyone interested is invited to attend.—J. M. Amos.

The **Suffolk County Farm Bureau Bee Club** will meet in the beeyard of William F. Buscher, Callihan's Road, Fort Salonga, Northport, L. I. at 2:30 p.m. on Sunday, July 17. The August meeting of the club will be held in the beeyard of Mr. John Frank, Patchogue Road, Holbrook, August 21 at 2:30 p.m., and the September meeting will be held at the beeyard of Robert Greiling, Prospect Road,Centerport, L. I. at 2:30 p.m. on September 18. At each of the above meetings, the Bee Club colony will be inspected to see what progress it is making. A package of bees was inserted in this colony at the May meeting.—H. D. Wells.

The **Westchester County Beekeepers' Association** will hold its next regular meeting on Sunday, July 17, at 2:30 p.m. at the home of Mr. and Mrs. Alfred Roth, 146 Oak Street, Port Chester, N. Y. An interesting program is planned for the afternoon. There will be inspection of hives and a demonstration will be given by Mr. Roth on Extracting Honey. Bee problems will also be discussed. An invitation is extended to all beekeepers and their friends. A pleasant afternoon is in store for all those who attend. Refreshments will be served.—Mrs. Alfred Roth, Publicity.

The **Tazewell Beekeepers' Association** will meet on Sunday July 10, at the Kennel Lake Club in Washington, Illinois. Mr. and Mrs. John Kinsinger will be hosts. Basket dinner at 1 o'clock D.S.T.

Mr. and Mrs. Geo. Berry will be host for the meeting on Aug. 14. The place of that meeting will be selected later. Members will be informed by cards as usual.—Jos. Jachman, Sec.

Election of officers for the **Stark County (Ohio) Beekeepers' Association** was held on May 29, 1955: Karl Michener, Pres.; William Wolf, Vice Pres.;

and Louis Meyers, Sec'y and Treas. Walter Klabuhn and Jim Dray will speak at the July 16 meeting. In the evening there will be the judging of the Honey Queen and the entertainment.—Louis Meyers, Sec'y.

July will be a busy month indeed for the members of the **Middlesex County Beekeepers' Association (Mass.).** On Saturday, July 9, the members have been invited to visit the summer home and apiaries of members Mr. and Mrs. Robert Cheney in York, Maine. On Saturday, July 16, we have received an invitation from the Worcester County Beekeepers' Association to attend their annual field day, which will be held at Wallace Parker's Apiary in West Boylston, Mass. On Sunday, July 24, Mr. and Mrs. William Austin have invited the members of the Association to visit them at their summer home on Monument Beach, Cape Co. On Saturday, July 30, the regular meeting of the Association will be held at the home of Mr. and Mrs. Chester McInnes, 521 Marrett Road, Lexington. This will be the first meeting to be held at the McInnes' new home, and we look forward with great pleasure to our visit. —L. C. Proctor, Sec'y.

The annual summer meeting for beekeepers, sponsored by the **Iowa Beekeepers' Association,** will be held through the courtesy of Mr. and Mrs. Carl Soder at their new honey house one mile south of Stratford, Iowa, on Saturday, July 9. The program will open at 10:00 a.m. with games and contests, and there will be a short speaking program in the afternoon followed by an apiary demonstration and special demonstration on queen rearing by Mr. Soder. A local organization will make available items for lunch at a nominal cost. Picnic baskets are in order for those who prefer them.—F. B. Paddock.

The **University of Massachusetts** at Amherst is featuring an interesting and informative program for beekeepers on August 13. The speakers will include Prof. George Abrams, Extension Specialist in Beekeeping, Univ. of Maryland; R. B. Willson, President of the R. B. Willson Co., of New York City; Mrs. A. W. Yates of Hartford, Conn.; and Milo Bacon, Chief Inspector of Apiaries, Boston, Mass. The program will be varied and should be very worthwhile. All interested beekeepers are invited to attend.

Northwestern Penna. Beekeepers' Association will meet on July 27, at Canadohta Lake, Pa. Picnic lunch at noon. Games and speakers after dinner. Plenty of entertainment available for children. All beekeepers are invited so come and bring another beekeeper. Prizes for all. — Mrs. Zona Spring, Sec., Crawford Co., Pa.

Beekeeping Associations representing the **Southern Wisconsin District** (Columbia, Dane, Green, Iowa, Jefferson, Lafayette, Rock and Walworth Counties) will have a combined picnic and summer meeting on Sunday, July 24, at the Girl Scout Area in Riverside Park, Watertown, Wis. Beekeepers, their friends, and any other persons interested in beekeeping activities are cordially invited.—S. J. Otis, Sec'y.

A new film called "The Miracle of the Honeybee" has been prepared by the Carling Conservation Club. This excellent 20-minute sound and color film is now available on free loan by contacting the Carling Conservation Club, P. O. Box 1817, Cleveland 6, Ohio. There is only one copy available in this country at the present time. Those interested in obtaining it on this free loan, should write them soon.

Asheville Next. — October 10 and 11, Asheville, N. C., is the date and place where beekeepers and their families from all over the South and many northern states will gather for a meeting of the Southern States Beekeeping Federation.

Asheville is right on top of that great Appalachian chain of mountains atop which the famous Skyline Drive and Blue Ridge Parkway wind their way. From Front Royal, Virginia, past Natural Bridge, through Roanoke and on to Asheville, tourists can travel for 300 miles with awe-inspiring vision atop the mountains. Scenic look-outs,

camping spots, picnic tables, famous restaurants, and tourists accomodations at convenient locations. This is a thriller for any vacation trip.

On October 12th following the convention, a guided motor tour into the Great Smoky Mountain National Park through the Cherokee Indian Reservation is being planned. This will be described with accompanying photographs in a later issue.

An opportunity for all beekeepers to invest honey with The American Honey Institute is again being offered. The big honey show will be an interesting feature and you will want to buy some of that famous SOURWOOD honey native of this area. Watch the journals for feature articles on this unusual event.—A. D. Hiett.

The monthly meeting of **Midwestern Beekeepers' Association** will be held July 10th at "Apple House" Unity Farms, Lee's Summit, Mo. at 2:30 p.m. The annual picnic of beekeepers will be held August 14th at Swope Park, Kansas City, Mo. All beekeepers and families should plan to attend to renew old acquaintances, make new friends, enjoy a basket dinner, take part in the contests, and go home with prizes. — Mr. A. W. Magers, Pres., Mrs. Mm. Brite, Sec.

Annual Meeting
Mississippi Beekeepers' Association
State College, Miss. — July 27, 1955
(In conjunction with Farm and Home Week) — Biology Building

8:30-9:00 a.m. Registration, Biology Bldg.
9:00-9:20 a.m. Annual Report of the Pres. J. P. Kislanko, Wiggins.
9:20-9:30 a.m. Annual Report of Sec'y-Treas., C. A. Wilson, St. College.
9:30 1. Apiary Location and Arrangement—M. M. Price, St. Plant Board Insp., Columbia.
2. Spring Manipulations (Building up the Colony for Spring Honey Flow) —N. C. Jensen, Macon, Ga.
3. Swarming—J. V. Pace, State College.
10:45 4. Appointment of Committees.
1:45 1. When to Re-queen and How —M. S. Fortune, Mayhew.
2. Bee Behavior—Homer Tate, State College.
3. Research on Nosema—Aaron Goza, State College.
4. Pollination—H. B. Green, St. College.
5. Honey Plants of Miss.—J. P. Kislanko State Plant Board Inspector, Wiggins.
6. American Beekeeping Federation and the Miss. Beekeepers Asso.—W. W. Wicht, Hattiesburg.

The **Cook DuPage Beekeepers' Association** is sponsoring the Illinois State Summer meeting Sunday, July 24, at Fernwood Park, 104th St., and Wallace Ave., Chicago, Ill.

10 a.m. Registration
10:30 a.m. Call to order by President Mrs. Wallanches
10:35 a.m. Carl E. Killion, Chief Inspector. Pkg. Bees v.s. Over-wintered Colonies.
11:15 a.m. Mrs. Harriett M. Grace, American Honey Institute.
11:30 a.m. Introduction of State Officers.
12:00 noon Potluck dinner, meeting old friends and making new ones
1:30 p.m. Dr. Walter Rothenbuler, Iowa State College
Our Future Queen.
2:00 p.m. Dr. V. G. Milum, Ill. University, My Experiences with Antibiotics
2:30 p.m. Maurice G. Dadant, Hamilton Ill. Royal Jelly.
3:00 p.m. Panel discussion and answering questions by all the speakers.
4:00 p.m. Talks for the Hobby Beekeeper

First Ohio Summer Meeting on Saturday, July 16 at the North Nimisillen School, intersection State Routes 44 and 62, north of Louisville, Ohio. Hosts, Stark Co. Beekeepers Asso. Meals on grounds. Door prizes.

A.M.
C. F. Cisler—Vice President, Ohio Beekeepers Association, presiding.
10:00 Stark Co. Asso. welcomes you. Agriculture Ext. Agent, Stark County
10:20 Welcome Address—H. R. Swisher, Pres., Ohio State Beekeepers' Asso.
10:40 European Experiences — Harry J. Vandenberg, Sec., Ohio State Asso.
11:00 Honey Marketing—Walter Barth, Associate Editor Gleanings
11:45 Lunch served in school lunch room
P.M.
H. R. Swisher, President Ohio State Beekeepers' Association, presiding
1:30 Comb Honey Packed in Glass—Geo. Rehman, Past Pres. Ohio Association, North Baltimore, Ohio
2:00 Let's-all-get-acquainted period
2:30 The Smaller Beekeepers' Biggest Problem—Chas. A. Reese, Ext. Spec.
3:00 Ohio Inspection Report—S. E. Bailey, State Apiarist Columbus
3:30 Introduction Candidates for Regional Contest for Ohio's second Honey Queen—Chairman Judges to be announced later.
4:00 Beekeepers' Problems from a National Aspect—Alan I. Root, General Manager, A. I. Root Co.
6:00 Regional Banquet — School Lunch Room—Toastmaster to be announced Good Eats—Fun—Presentation winner and runner-up Regional Candidates for Ohio's 2nd Honey Queen. Plan to stay for the Banquet—Fun for all.

Second Ohio Summer Meeting—Saturday July 30th, at the Church Hall, intersection State Routes 25 and 122, in Blue Ball, Ohio, near Middletown, Ohio. Hosts—S. W. Ohio Beekeepers' Asso. Meals served on the grounds.

A.M.
C. F. Cisler—Vice President Ohio Beekeepers Association, presiding.

10:00 S. W. Beekeepers' Assn. welcomes you—W. D. Redding, President
10:20 Welcome Address—H. R. Swisher, Pres. Ohio State Beekeepers' Asso.
10:40 Beginners' Problems of Packing and Selling Honey—Walter Thomas, Root Co., Medina, Ohio
11:00 Ohio Inspection Report—S. E. Bailey, State Apiarist, Columbus, Ohio
11:20 The Beginner and Comb Honey—R. D. Oglesby, Middletown, Ohio
12:00 Lunch—Church Hall—Good Eats—Reasonable—Ladies of the Church

P.M.

H. R. Swisher, President, Ohio State Beekeepers' Association Presiding.

1:30 Tricks of the Trade—Jack Deyell, Editor, Gleanings
1:50 Introduction Contestants for Regional Honey Queen—Chairman Judging Committee to be announced.
2:10 Let's-all-get-acquainted period
2:30 'BEE-in—NOT Buzzin'—R. L. Livermore, Belle Center, Ohio
2:50 More about Beekeepers' Biggest Problem—Chas. A. Reese, Ext., Spec. Ohio State University
3:10 Honey Flow Problems—Dr. Winston Dunham, London, Ohio
3:20 Gleanings from Experience—Emerson Long, St. Paris Ohio
3:40 Introduction winner and runner-up for Regional Contest for Ohio's second Honey Queen
4:00 General Round Table—Crops, Conditions, Reports, Questions. Beekeepers present participating
4:20 The Changing Beekeeping Picture—John Buchanan, Medina, Ohio
6:00 Banquet—Church Hall—Fun, Talks, Gems of Wisdom. Good eats and last but not least the choosing of Ohio's second Honey Queen and her alternate.

Plan to come to the Blue Ball Meeting and the Banquet to follow. Toastmaster to be announced. Door prizes.

Ohio's Second Honey Queen Contest—All beekeepers, daughters, sisters, and wives between the ages of 15 and 25 who will be able to attend the Canton and Middletown meetings and compete for OHIO'S second Honey Queen are urged to do so. Provided other interests will permit them to take an active part in the October Honey Week Program during the last week of October. The winner will receive a handsome trophy and possible opportunities to appear on television and radio programs. No particular application is needed—just plan to attend with your family at one or both of the state meetings. You can fill out qualification blanks when you attend the meeting.

We wish to extend a most cordial invitation to any of our Southern Beekeeper Friends who may be touring the northern meetings or beekeepers from neighboring states to attend these meetings and make yourself at home.

A TALK TO BEEKEEPERS

(Continued from 434)

constitutes the main crop and where there is little, if any, fall honey flow. It has been demonstrated beyond a doubt that the two-story or food chamber method of wintering bees is preferable to the single-story method. However, some beekeepers remove all the surplus honey from above each single-story brood chamber, then feed sugar syrup for winter stores. This can be done but it is expensive and time consuming. In our opinion, a two-story brood chamber colony is likely to have more bees, honey and pollen than a single-story colony.

Here in northeastern Ohio where there is usually a heavy fall flow from goldenrod and aster, we like to have a queen excluder above the double brood chamber or on top of the food chamber. When nights are cool in late August and September, bees will fill the food chamber and drive the queen down into the bottom chamber. Such management helps insure having the food chamber well filled in addition to some honey in the lower chamber.

In areas where there is no fall flow of any consequence, it seems advisable to confine each queen to a single brood chamber by using a queen excluder during the late summer and fall months. This helps to insure having the food chamber directly above the excluder well filled. If a fall flow should develop supers may be added directly above each food chamber.

When we receive letters from beekeepers over the country complaining of the poor condition of colonies in the spring it seems that much of this trouble could be averted if only each beekeeper made it a point to have a superabundance of stores on each colony late in the fall. It seems obvious that much of the so-called winter losses of bees can be attributed to lack of food and not lack of winter protection.

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Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

CLOVER extracted honey in sixties. Abram Brubaker, Lancaster, Pa., Rt. 2.

WANTED—Buckwheat and some light comb honey. Eastern Food Products, 115 Division Ave., Brooklyn, New York.

Michigan's finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned sections. Extra Fancy, $8.00; Fancy, $7.00; No. 1, $6.00; No. 2, $5.00 case. E. Z. Quick Way B Farms, Boyne Falls, Mich.

FOR SALE — CLOVER COMB HONEY, ready about July 15. Write for prices. C. W. SCHRADER, WATERVILLE, N. Y.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

CASH for your comb honey and all types extracted. Send sample and best price. Buckeye Honey Co., 3930 No. High St., Columbus 14, Ohio.

CASH for Beeswax. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

HONEY WANTED — All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, California.

WRITE FOR Shipping tags and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Kentucky.

HONEY WANTED, all grades in 60's. Mail samples advise quantity, best price. A. I. Root Company of Syracuse, 1112-14 E. Erie Blvd., Syracuse, N. Y.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

WANTED—Light amber-clover and fall-flowers honey. Cloverdale Honey Company, Fredonia, N. Y.

BEST CASH Deal for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A. I. Root Co., Medina, Ohio, Council Bluffs, Iowa, San Antonio, Texas.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, Ohio.

WANTED—Honey in 60's. Send sample and price. Lloyd E. Allen, Tipton, Mich.

WE ARE PAYING top prices on beeswax and honey shipped to one of our plants. Sioux Honey Assn., Lima, Ohio; Rogers, Texas; Anaheim, Calif.; Tacoma, Wash.; and Sioux City, Iowa.

WANTED—Dark or strong flavored honey for cash. Send price and quantity. R. Griggs, Hancock, Iowa.

WANTED—Light or amber honey, in barrels. Send price, quantity, and sample. Bert Lampson, 4 Columbus, Manatee, Fla.

FOR SALE

WRITE FOR CATALOG — Quality Bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other Catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE — New heart cypress 10-frame bottom boards. K.D., 10 or more, $1.00 each; 50 or more, 90 cents each; 100 or more, 85 cents each. One nailed up sample postpaid, $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

COMB FOUNDATION PLANT OF THE EAST—that's WAX WORKERS, 1330 Slaterville Road, ITHACA, NEW YORK.

FOR SALE—8-frame Root equipment for 700-colony apiary. Write for details to E. H. Wadleigh, Monte Vista, Colo.

1300 new standard Kelley brood frames. A. Coderko, Hillsboro, Ills.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries, Waban, Massachusetts.

FOR SALE—Bradshaw capping press in good condition. Old Taylor Honey Co., Harlan, Iowa.

FOR SALE: 40 standard hives with 10 frames with combs or without, all equipment, 3-frame extractor, etc. Very reasonable. Liquidation due owner's sickness. C. Shulakoff, New Egypt Rd., Cassville, N. J. also LAkewood 6-2349, W2.

MODERN extracting and bottling equipment—stainless steel and aluminum, except for extractor. H. F. Witman, 9 Waugh Ave., Glyndon, Md.

TWO HONEY MIXING AND STORAGE TANKS. Closed, double-jacketed enamel lined with agitator. 1,200 and 5,000 pound capacity. A. I. Root Company, Council Bluffs, Iowa.

FOR SALE—70 supers, 4 x 5, with holders, fences. Write Melvin Youngs, Route 1, Howell, Mich.

FOR SALE—Deep supers, 55c; shallow supers, 35c; metal tops, 65c; bottoms, 35c; many other items. Send for inventory. Vernon Stevens, 278 East College Street, Oberlin, Ohio.

FOR SALE—1300 once used 60-lb. cans with cartons, just like new, 40c each. Also 3000 60's without cartons, 25c to 30c each, or take them and fill them up with honey for us. Take all you have. We want 1000 cases or less of comb honey; also please state price. The Honeymoon Prod. Co., 39 E. Henry St., Box 85, River Rouge 18, Mich.

FOR SALE—Used, 25 large supers, 20 shallow 25 queen excluders, 15 bottom boards, 15 metal covers, frames. 25 per cent less for all. Wm. Borsch, 118 Lakeview Dr. (Mentor Headlands), Painesville, Ohio.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

ITALIANS — Packages, Queens. Martz, Rt. 2, Box 846, Vacaville, California.

CAUCASIAN queens, $1.00 each. C. B. Eppling, Idlewilde, Covington, Virginia.

CAUCASIANS—Very hardy, gentle long lived, good workers, personally raised. Young laying queens, $1.00 each. Fred Brock, McDonald, Tenn.

NORTHERN ITALIAN QUEENS — for production $1.00 each; 10 up, 90c. Shirl Baker, Rodney, Michigan.

THREE-BAND Italian Queens, 80c; 20 or more, 75c. Luther Pickett, Efland, N. C.

CAUCASIAN queens, balance season, 1 queen, $1.00; 25 or more 75cents each. Lewis & Tillery Bee Co., Greenville, Ala.

GOLDEN ITALIAN bees and queens. Real yellow and very gentle. Select untested, 1 to 25, $1.00; 25 up, 90c each. Carolina Bee Farm, Graham, N. C.

THREE-BANDED Italian bees and queens. Extra good workers and very gentle. Dadant's Starline Hybrids and our regular Italians. Starlines, 1 to 25, $1.30; 25 to 100, $1.20; 100 up, $1.10; and for our regular Italians deduct 25c per queen. Alamance Bee Company, Graham, N. C.

For SALE—500 colonies. Equipment to run 1250 colonies. Lease or sell. Box 655, Gleanings, Medina, Ohio.

FOR SALE—146 10-frame colonies of bees and equipment, inspected. Selling on account of death of husband. Mrs. Homer Ross, Rt. 1, Poseyville, Ind.

FOR SALE—About 10 strong healthy colonies Italian bees. Excellent equipment. Karl Rude, Mexico, N. Y.

HONEY WANTED

Carloads and less than carloads. Mail sample and best prices in all grades.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

HOLLOPETER'S

Hardy, Hustling, Honey-gathering Italians. Reared on top of the Allegheny Mountains, and bred for hardiness, honey gathering qualities, with ease of handling.

Price of mated laying queens:

1-9	$1.00 each
10-24	.90 each
25-49	.80 each
50-100	.75 each

White Pine Bee Farms

Box 810, Rockton, Pa.

GIRARDEAU APIARIES

Shippers of

Italian Package Bees & Queens

Tifton, Ga.

Booking orders now. Over 30 years a shipper. Send for Free Circulars.

BLUE BONNET APIARIES

Weslaco, Texas

JOHN DAVIS QUEENS

We ship until November 1 and fall is the right time to requeen. Order now and be sure. $1.00 each, any number.

LITTLE'S APIARIES

Shelbyville, Box 122, Tenn.

HONEY LABELS

Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

We Regret the Delay . . . .
. . . in delivering some orders.

Please accept our word that it was because of unseasonable weather. Conditions were good at the time of the freeze on March 27th when all possible source of pollen and nectar was killed and at this date May 6th we have seen our first new nectar of any consequence.

This condition seems general and we could not secure bees from other shippers or honey producers.

Queens are now available. Write for particulars and prices.

Rossman Apiaries

P.O. Box 133 Moultrie, Ga.

Package Bees & Queens
Quality & Service
C. F. KOEHNEN & SONS
Glenn, California

HARPER'S FAMOUS
High Quality Italian Queens
& Package Bees
1 to 9 . . 75c ea. 10 & up . . 65c ea.
by Air Mail
CARLUS T. HARPER
New Brockton, Ala.

QUEENS $1.00
3-banded Italians
W. E. PLANT
Hattiesburg, Miss.

INTERESTED in Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, San Angelo, Texas, the only ranch magazine published serving the Angora Goat industry. Subscription $1.00. Sample copy fifteen cents.

FOR SALE—40 hives bees and equipment, power extractor and uncapper inspected; 12 miles northeast of town. Wm. F. Bachman R. 3, Falls City, Nebr.

SEEDS

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Iowa.

MISCELLANEOUS WANTED

WANTED—Copper tank, tinned inside. 10, 20, or 30-gallon. What have you? Perfect in detail, no dents. Covered or open. State price, crated C.O.D. John Whitefield, DeLancey, Jeff County, Pa.

MISCELLANEOUS

Bargains in new or used honey cans or Root Supplies for cash or honey. Buckeye Honey Company, 3930 N. High St., Columbus 14, Ohio.

POLLEN PIES — Supplements lack of natural pollen. Hive fed. Used the country over. 75 cents pound. BURL-WICKS—Light and drop in smoker. Chemically treated. Harmless to bees. Convenient and long lasting. Season supply (6) $3.00. EASTON'S BEETERIA, Box 99, Sidney, NEW YORK.

HELP WANTED

WANTED — Experienced beeman until November 15. State age, wages, wanted. Kenneth Thayer, 2122 Ames, Saginaw, Michigan.

SUPPLIES

NOW READY — Your copy of the BIGGEST MONEY SAVING CATALOG of Quality Bee Supplies at savings up to 25%. Prompt shipment—100% satisfaction guaranteed. WRITE TODAY! MONDENG MFG. CO., MINNEAPOLIS 5, MINN.

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Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh Dist. Naini Tal, U. P. India, or available through them. Subs. Rs9/ or 15 shillings or $2.25 yearly. Sample copy post free for Rs1/8/, or s2/6, or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

ARCHIVE of BEE SCIENCE (Archive fur Bienenkunde), oldest scientific, independent bee journal in the world. Select feature material gives lasting theoretical and practical knowledge. Sample copies available. Two large 1953 editions for the low price of DM 5.50. Biene-Verlag (Bee Publishers), Lindau (B). Postcheck Karlsruhe 5581, Germany.

BEE WORLD, the international journal of the Bee Research Association, published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $3.00 per annum. Apicultural Abstracts only $1.75 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 Barnett Wood Lane, ASHTEAD, Surrey, England.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3306, Cape Town, South Africa.

Those Good Dark
ITALIAN QUEENS
1 to 25 ..... $1.00 each
25 and up ..... .90 each
WEAVER APIARIES
Navasota, Texas

QUEENS BY RETURN MAIL **65c**
2-lb. package with queen $2.75
3-lb. package with queen 3.50
Tested queens 1.00
BRIGHT 3-BANDED ITALIANS, guaranteed in every respect. Package bees F.O.B. express; if wanted shipped parcel post, add postage.
NORMAN BROS. APIARIES Ramer, Ala.

YOUNG ITALIAN QUEENS
Delivered to you Air Mail.
Price 70c each.
GASPARD BEE CO. Hessmer, La.

EFFECT OF DDT ON HONEYBEES

(Continued from page 394)

aries located just outside the sprayed area, and three located within it were visited; no abnormal number of dead bees could be found. A field containing much yellow rocket and dandelion bloom adjacent to a commercial apiary about one-half mile within the sprayed area, was being actively visited by bees, but no dead ones could be found on the ground in the field, or near the colonies.

An examination of brood was made in each of the nine colonies on May 18th, but no evidence of injury could be found. All colonies were in good condition, and two of them were building queen cells preparatory to swarming. On May 31st the nine colonies averaged nearly 12½ frames of brood.

On May 28th the commercial apiary (near the nine colonies) which averaged five combs of brood on April 30 now averaged slightly over nine indicating normal development during this interval. On July 27th and 28th a final check was made in the area. No evidence of damage was noted in four commercial apiaries within the sprayed area, or five apiaries outside but near the margin of the sprayed area. No evidence of damage was noted during the rest of the season in the nine colonies which were returned to Ithaca on May 28th.

(to be concluded)

— HONEY WANTED —
ALL GRADES. SEND SAMPLES
ADVISE QUANTITY
HONEY SALES COMPANY
1806-08 No. Washington Ave.
Minneapolis 11, Minnesota

1955 QUEEN BEES
3-Banded Italians
1-9 ..... $1.10 each
10 or more ..... 1.00 each
Queens ready about April 5th.
Geo. W. Moore
Shasta, Shasta Co., California

Italian Queens
EUGENE WALKER
Rt. 2, Box 892
Live Oak, California

NORTHERN QUEENS
Pure Leather Colored Acclimated Italian Stock
Untested, 1-24 ..... $1.00
24-up ..... .75
Select tested in large cages 2.00
Service and Satisfaction
BARGER APIARIES Carey, Ohio

"The Australian Bee Journal"
Published by the Victorian Apiarists' Association at the beginning of each month.
Subscription 10/-per annum plus 2/6 postage to oversea countries.
Address 112 Whitehorse Rd.
Ringwood, Victoria, Australia

The Yanke Strain — $1.00 each
The Best Queens for Honey Production
22 Years of Breeding
The Stricker Apiaries
Annandale. N. J.

The Picture Bee Magazine
If you are taking time to read, why not read the best? Condensed to save you time. Illustrated to give you pleasure.
Modern Beekeeping
Clarkson, Kentucky

Prepare for the Future . . . .
Buy U. S. Savings Bonds

SUMMER PRICES

First Quality Italian Bees and Queens

Prices for rest of season:

2-lb. packages with queens ..... $2.50 any number
3-lb. packages with queens ..... 3.00 any number
Untested queens ..... .60 any number
Tested queens ..... 1.00 any number

Bees F.O.B. Queens mailed and clipped on request. All Merrill's bees and queens are backed with our 100% satisfaction.

MERRILL BEE COMPANY
Box 115 State Line, Miss.

Want the Latest Facts on Bees and Beekeeping?

Then get a copy of

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"Starting Right with Bees" ..... 75 cents

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The A. I. Root Co., Medina, Ohio

OLDEST BEE JOURNAL IN THE ENGLISH LANGUAGE

Keep up on markets, practices, scientific data, regulations and plant possibilities.
1 year, $2.00, U. S. and Canada
Foreign postage, 50c a year extra

AMERICAN BEE JOURNAL
Hamilton, Illinois

TOO LATE TO CLASSIFY

FOR SALE—100 deep supers, some covers, bottom boards etc. E. L. Potter, 2115 Alpha St., Lansing, Michigan.

Answers to Picture Quiz, page 420

1. Robert Banker. Secretary-treasurer of the American Beekeeping Federation. One of the men responsible for the success of the national organization.
2. Elbert Jaycox. Supervisor of Apiaries for the State of California. Bert is interested in bee breeding and has studied for a Ph.D. under Dr. Laidlaw at Davis, California.
3. W. C. Johnson. South Carolina Extension Apiarist. A leader in southern affairs.
4. W. L. Coggshall. N. Y. Extension Apiarist. Interested in beeswax and pollination. He has co-authored an excellent article on DDT in this issue of Gleanings.

JENSEN REARED QUEENS

"RIGHT NOW SERVICE". Our production continues at top level. Only queens reared with utmost incentive of the producer, under best possible conditions and methods, are worthy of your consideration, expenditure of money and time. Breeding background of stock is basic, and conducive to what every queen-breeder strives for, i.e., "EXCELLENCE".

Reg. U.S. Pat. Off.

Our aim is that every queen we send out shall be as near a perfect specimen as is possible for us to produce. Our clipping and marking service is FREE. All Starline Hybrids are clipped and marked.

PRICES for remainder of season:

	Dadant Starline Hybrids	Magnolia State Italians
1-24	$1.35	$1.10
25-99	1.25	1.00
100-up	1.15	.90

JENSEN'S APIARIES MACON, MISSISSIPPI U.S.A.

"The Business Quality Built"

MOUNTAIN GRAY CAUCASIANS

Personally raised. Gentle, good workers; winter well. Queens $1.00 each.

ELBERT S. CHILDS

201 Garden Ave. Knoxville 18, Tenn.

ANOTHER HONEY HOUSE

(Continued from page 405)

straight copper but stay a lot sharper and do not need sharpening nearly as often. The cappings go directly into the driers and the uncapped combs are loaded right into the extractors. The two 30-frame extractors are loaded while the 50 is running, and then the operation is reversed.

The honey tanks are in the main room. Most of the honey goes out in bulk so is pumped into settling tanks and then drained off into 60-pound cans. The honey that is packed for local sale is pumped into a high settling tank, then drains by gravity through a small flash heater, and directly through a bag type strainer that is suspended in a small holding tank.

The alleyway between the two buildings is also a powerhouse. So far we are not on the high line so have to have our own power plant. It is also a place for all those small things a fellow has and needs but can't find when they are put in a large room and something gets piled in front of them.

Plenty of water for all needs is supplied by a small centrifugal pump on a well in the honey house at the back of the truck dock. No steam boiler is used as yet and I doubt if one will be added. Heat for the hot room, and for the flash heater is from bottle gas and all cappings are sent to a wax plant for processing.

CAUCASIAN & CARNIOLANS

Requeen your increase with either of these — gentlest, have longest tongue of any race of bees, and build up rapidly with white comb.

Untested queens $1.20

Foreign price, by air mail 1.50

Mail orders to Tenn. address after May 25th.

W. D. REAMS

R 5 Morristown, Tenn.

WILLIAMS' ITALIAN QUEENS
LARGE LEATHER COLORED
THREE-BANDED
QUALITY SUPREME

CERTIFICATE WITH EACH SHIPMENT

1 - 9	Postpaid,	Airmail	$ .85
10 -99	"	"	.80
100-up	"	"	.75

DR. WILLIAMS APIARIES

115 W. Sterling Ave. Baytown, Texas

QUEENS

Italians Caucasians

Through September

Nice large queens .....60c each

Send us your order for 1 or 1000

MITCHELL'S APIARIES

Bunkie, La.

ITALIAN

Package Bees and Queens

Jackson Apiaries

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STARLINE HYBRID QUEENS—Ahead of anything we have tried in Hybrids. Send for descriptive results of 3 years test of Dadant Starline Hybrid Queens.

GARON'S OWN 3-BANDED ITALIAN STOCK improved through Know-How in selecting Breeding Queen Mothers for combinableness necessary for highest Honey Production.

DADANT'S STARLINE HYBRIDS

Reg. U.S. Pat. Off.

PRICES:	Italians	Starlines
1-24	$ .95	$1.30
25-99	.90	1.20
100-up	.85	1.10

Queens clipped and marked when desired, and Air Mailed at no extra cost.

GARON BEE COMPANY Donaldsonville, La.

QUEENS — ITALIANS — QUEENS

We offer you young laying queens, shipped prepaid Air Mail. Clipped and painted on request.

75c each any number

Tested Queens .....$1.50 each

QUALITY DOES NOT COST — IT PAYS

THE WILBANKS APIARIES Claxton, Georgia

QUEENS "GULF BREEZE" ITALIANS

Do you want a good strain of bees for comb and chunk honey production as well as extracted crops? Then do like the champions do and use "GULF BREEZE" stock.

Prices: 1-24, 90c each 25-99, 80c each 100-up, 75c each

BESSONET BEE COMPANY Donaldsonville, La.

Howard Weaver's

PERSONALLY REARED

CAUCASIAN QUEENS

1 to 9 ..... $1.00

10 and up .. .90

Howard Weaver

Navasota, Texas

STOLLER'S

Frame Spacers

The finest thing ever offered beekeepers. See your dealer, or write.

STOLLER HONEY FARMS

Latty, Ohio

HONEY HOUSE FOR SMALL APIARIES

(Continued from page 403)

come in handy, not only to provide heat during cold weather but also to use in the extraction of wax when old combs and cappings will have to be melted or rendered into wax.

A good substantial work bench equipped with a large iron vise, racks for small supplies, boxes or glass jars for nails of various sizes, and a cupboard, can all be arranged to fit the needs of the beekeeper and will make his work with the bees more pleasant and profitable.

The extracting outfit, including the uncapping tubs or boxes, and honey settling tanks, should be arranged so that heavy lifting is avoided. Many ideas can be worked out and plenty of money can be spent on fixtures for a bee house, but we will leave that expensive equipment to the beekeeper who has been able to look on the commercial side of beekeeping.

YORK'S QUALITY BRED QUEENS

Your Choice of Two Outstanding Strains

DADANT'S Improved Starlines or
YORK'S Quality Bred Italians

Italians		Starlines	
1-24	$1.00	1-24	$1.30
25-99	.90	25-99	1.20
100-up	.80	100-up	1.10

Reg. U.S. Pat. Off.

The Preference of Leading Honey Producers

YORK BEE COMPANY — **Jesup, Georgia**
(The Universal Apiaries)

BETTER BRED QUEENS — **THREE-BANDED ITALIANS**

65c ea. Don't let that poor queen rob you. Replace her with our Better Bred Stock. It will pay you to requeen. **65c ea.**

Air mail — **Air mail**

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J. E. WING & SONS
42 Years Continuous Service
Italian Package Bees and Queens
Our Specialty
Knights Landing, Calif.

CAUCASIAN or ITALIAN
Package Bees and Queens

Bees gentle to work with, less swarming, good producers, health certificate, and live arrival guaranteed are just a few things you get when your requirements are sent to me.

PRICES ARE:

Quantity	1-25	25-50	50-100
2-lb. pkg. w/q	$3.00	$2.90	$2.85
3-lb. pkg. w/q	3.90	3.80	3.75
4-lb. pkg. w/q	4.85	4.75	4.65
5-lb. pkg. w/q	5.80	5.70	5.50
Queens	1.00	.90	.80

FARRIS HOMAN
Shannon, Miss.

MEET THE CHAMPIONS

(Continued from page 410)

These colorful apiaries clearly in view along the mountain roads, each with an easily readable sign made of about eight-inch block letters cut out of wood: MIEL CARLOTA, command attention and are good advertising.

Disease

Both American and European foulbrood exist in this area, as does Nosema, but foulbrood never has been seen below the elevation of Cuernavaca—about 5000 ft. This is probably not a matter of elevation but if this writer may venture an opinion, there is a direct correlation between the incidence of foulbrood and intensity or prolongation, or both, of the heat of any location. This opinion is based on many observations in the tropics where foulbrood does not appear or when it does appear, it does not persist. It would seem that sufficient prolonged intensity of heat itself controls foulbrood diseases.

(to be concluded)

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Look for this Sign
When you Want
QUALITY AT LOW COST

Trade Mk. Reg.
U. S. Pat. Off.

KELLEY — "The Bee Man"

QUEENS

KELLEY ISLAND queens by the thousand are available now. If you are in a rush count on us for quick shipment by return air mail.

1-24 ..... 75c by prepaid air mail

25-up ..... 65c by prepaid air mail

THE WALTER T. KELLEY CO. Clarkson, Ky.

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and grow bigger every year.**

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Dadant & Sons, Inc.

Hamilton, Illinois

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